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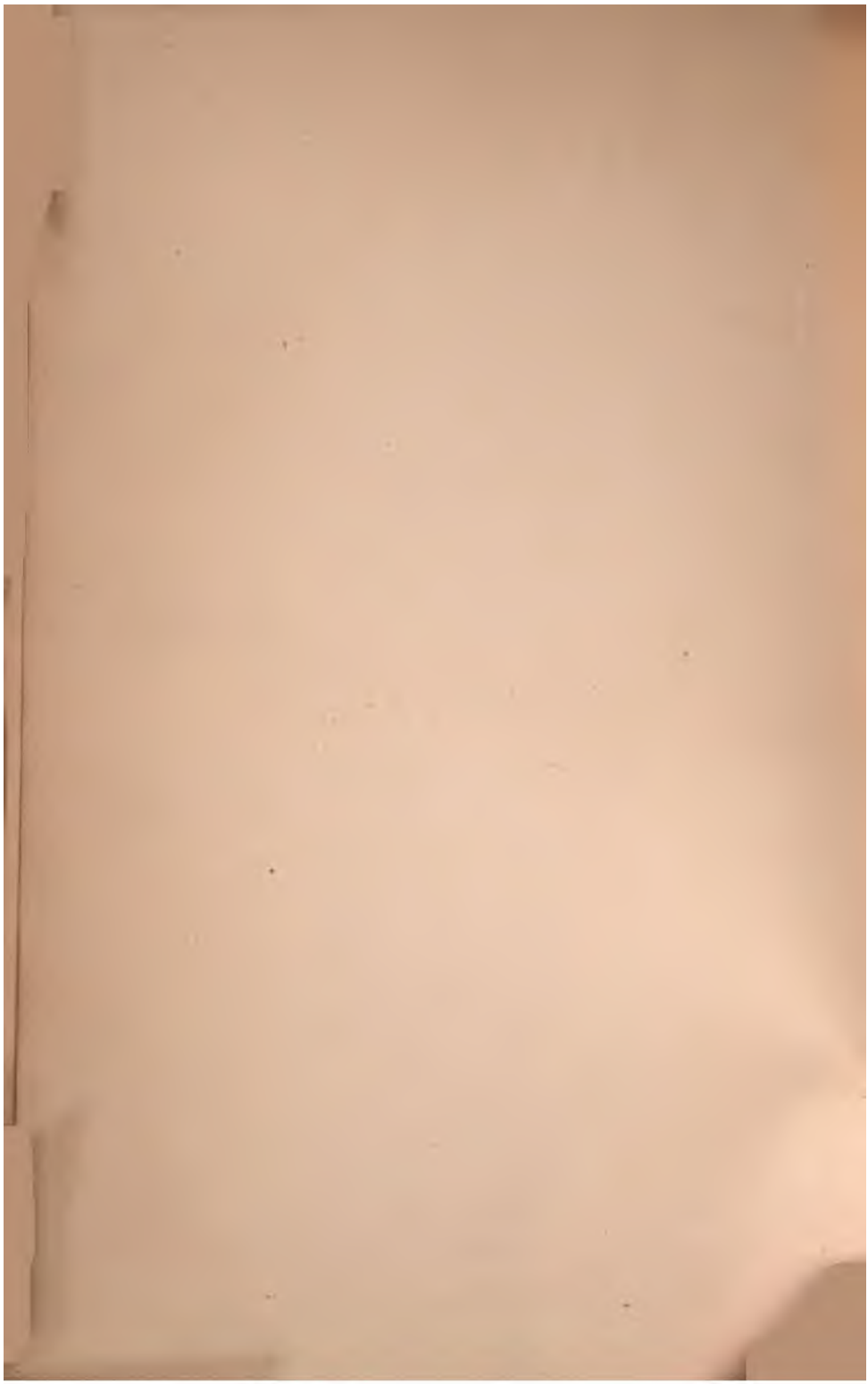

THE

RETROSPECT

OF

PRACTICAL MEDICINE AND SURGERY,

BEING

A Half-Yearly Journal,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

W. BRAITHWAITE,

LECTURER ON OBSTETRIC MEDICINE AT THE LEEDS SCHOOL OF MEDICINE, ETC.

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PRACTICAL MEDICINE,

&c., &c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

ART. 1.—ON THE RELATION BETWEEN THERAPEUTICS AND PATHOLOGY.

By DR. GEORGE JOHNSON, Assistant Physician to King's College Hospital, &c.

[DR. JOHNSON truly observes that on few subjects is there such diversity of opinion as upon the effects of remedies in disease, their modes of action, and the best methods of administering them. This, in a great measure, he believes to be owing to the carelessness manifested as to the natural history of the disease. If we had a specific for most diseases, as quinine for ague, the importance of diagnosis and scientific pathology would not be so great. They are the more important, however, since, as we do not possess many of this class of remedies, we are obliged to treat diseases on what are termed *general principles;* and it is improbable that for many diseases specific remedies will ever be found.]

There is, probably, no better test of the truth or soundness of any doctrine, when applied to practice, than the fact of its being consistent with the dictates of well-informed common sense; and, perhaps, I could give no better illustration of the beneficial influence which has been exerted by this kind of appeal, than is to be afforded by the modified views now prevalent with regard to the nature and treatment of inflammation. It certainly does appear contrary to common sense to suppose, that a disease, whatever may be its name or its nature, which has been induced by exhausting and depressing influences,—by excessive labour, by loss of rest, by abstinence, by hemorrhage, or by some other drain upon the bodily strength,—that a disease so originating can be removed by a recourse to measures which have the same exhausting and depressing tendency,—by the free abstraction of blood, by a rigidly low diet, and by active purgatives. Science has listened to the voice of common sense in this matter, and, in spite of the dogma *similia similibus curantur*, a method of practice which was originally suggested by imperfect and erroneous views respecting the nature of inflammation has been greatly modified, and with the happiest results. It is now becoming more and more apparent, that the *quantity* of blood in the vessels of an inflamed part is not the primary and most important fact in the phenomena of inflammation; that the so-called increased afflux, or determination, of blood, is in reality produced by impeded flow of blood through the capillary vessels, resulting from an altered relation between the blood and the tissues with which it is brought into contact. This altered relation between the blood and particular tissues, may depend upon an excess of nutrient materials in the circulating fluid, or it may depend upon a directly opposite condition, or upon other changes in the *quality* of the blood. So that, however great may be the resemblance between the local phenomena of inflammation in different cases, the treatment must be conducted with a constant reference to the causes which have given rise to the disease.

The importance of ascertaining the remote originating cause of a disease is great in proportion to the degree of doubt which there may be as to the precise nature of the local changes upon which the symptoms in any given case are supposed to depend.

Perhaps I cannot better illustrate this remark than by a reference to those cases in which cerebral symptoms, and especially heaviness of the head and drowsiness, occurring in feeble and exhausted infants, might be erroneously supposed to indicate

an inflammatory condition of the brain—cases of hydrocephaloid d
have been called by Marshall Hall, who was, I believe, the first to publ
of the affection in question. Dr. Gooch's valuable essay on this sub
known, that I scarcely need refer to it, except for the purpose of rec
to the notice of any one who, perchance, may not have met with it.
determining the true nature and the appropriate treatment of the
observe, not only the heaviness of the head and the drowsiness, but a
paying symptoms, and the previous history of the child. We are t
Dr Gooch advises, "that a drowsy child, who is languid, feeble, coo
with a quick weak pulse, should not be treated by bleeding, starving
like a drowsy child who is strong, plethoric, has a flushed face, and a
When, in addition to the symptoms of exhaustion before mentione
we often shall on inquiry, that the child has been recently weaned
some cause or other, its food has disagreed, that the bowels have b
and relaxed, or that the patient's strength has been reduced by active
fering, little doubt will remain as to the nature of the case, and as
necessity for nutritious food, for stimulants, and for tonics. I shall
occasion to insist upon the importance of directing attention to the
of disease, as a means of determining both its true pathology and
treatment.

I purpose now to illustrate the connexion between pathologic
rapeutics, therapeutics, by a consideration of hypertrophy of the heart.

It was formerly much more than at present the custom to speak, and
of hypertrophy of the heart, as if it were a disease *per se*, against w
measures were to be directed, without consideration of the cause of
ptoms, or the possible consequences of injudicious attempts to remov
not surprised to hear such language from non-professional persons, w
selves of themselves, or of their friends, as having "enlargement of t
who appear to consider that this is a sufficient account of the disease,
who require a physician to give an opinion as to its probable conse
cannot, however, but experience a feeling of astonishment, when we fin
times so, that even those who appear to consider themselves compet
the treatment of these diseases, disregard the very elements of the q
A few years since, there appeared, in a medical journal, a paper, in which it
hypertrophy of the heart by the inhalation of medicated vap
was stated that this method of treatment afforded great hopes of succ
as the remedy would speedily be brought into direct contact with the
primarily affected,—viz. the left ventricle. Now, the obvious defect in
the absence of any allusion to the various causes, and the pathologica
of hypertrophy of the left ventricle. There is no indication that
the writer at all appreciates the great difficulty in the way of curin
of the heart without a previous removal of the cause which gave
the fatal mischief which might ensue, if, by any means, such a
attainable.

A consideration of the various causes which give rise to hyper
will suffice to show the unreasonableness of expecting to re
the removal of a condition so diverse in its origin. I may state, *in lim*
as presenting no exception—there is, certainly, no *proved* exception
that hypertrophy of the walls of the heart results from continued
repeated increased contractions of its muscular fibres. It consists in
growth of muscular tissue, and this results from the frequent and vi
beats of the heart, which are occasioned by a necessity for some addi
energy in the circulation. This growth of muscular tissue, in obedie
to the increased exertion, is one of the beautiful instances of those
and reparative processes with which the physiologist and pathologist
the operation of the same beneficent law is seen in the firm and mas
the blacksmith's arm, as compared with the flabby and undeveloped
in which, as we see, of supply being regulated by deman
It appears that hypertrophy of the muscular walls of the heart is
a simple physical phenomenon: but when we proceed to inquire int
circumstances which may give rise to this demand for increased effor

of the heart, and the consequent hypertrophy of its muscular tissue these causes are numerous and very diverse; and it becomes app success in the treatment of this condition must greatly depend upo detect and to remove its originating cause.

Among the most frequent causes of hypertrophy of the left vent diseased condition of the aortic valves, or of the aorta itself; and, s diseased or imperfect state of the mitral valve as will permit the bl tate into the auricle. The result of each of these conditions is, that t has to perform more than its natural amount of work, and, in consec cular walls acquire an increase of thickness. Narrowing of the aor diseased condition of the arterial walls, exerts an obstructive influ current of blood directly, while a diseased condition of the aortic v which permits of regurgitation, may cause an indirect, but equal imp circulation, for the system demands a certain supply of blood in a g as the blood which regurgitates either from the aorta into the ve the ventricle into the auricle, in no way contributes to that supply, regurgitation, if it could be estimated, would be an index of the ventricular contraction, either as regards force or frequency, or bot dered necessary by this backward current. In each of the cases wh tioned, the hypertrophy of muscular tissue is a natural result of th mand for the muscular power which is required for overcoming an the onward passage of the blood.

In the cases to which I have now alluded, there is a very obvi cause, in the condition of the valves or of the arterial walls, for the lation, and the consequent hypertrophy of the left ventricle. But t rous and important class of cases in which there exists a very ma hypertrophy of the ventricles without disease of the valves or of the without any obvious cause of impediment to the circulation. This trophy occurs, for the most part, in connexion with chronic diseases and it will, perhaps, be remembered, that in the "Gulstonian Lecture the honour to deliver last year, I entered at some length upon the c this subject, and then suggested what appears to be the most reas tion of hypertrophy of the left ventricle, when it occurs in connexio renal disease, and unassociated with disease of the valves or large subject is one of much interest and importance, as well to those wh the connexion between morbid phenomena, as to those who are treatment of disease. At present, I can only refer to such of the le arguments as will suffice to show in what way the question bears up inquiry—the relation, that is, of therapeutics to pathology.

The connexion between hypertrophy of the left ventricle and chr the kidney was first pointed out by Dr. Bright, whose observations are in strict accordance with those which have been since made Bright found, that, in 52 out of 100 cases of renal disease, which after death, there was hypertrophy of the heart. In 34 of these 52 trophy no valvular disease whatsoever could be detected, but, in 1 there existed more or less disease in the coats of the aorta; and th perhaps have impeded the circulation, and so have occasioned hyp however, there remain 23 cases without disease either of the valves rial coats, without, as Dr. Bright remarks, "any probable organic marked hypertrophy generally affecting the left ventricle." Now, the explanation of these cases is this, that the blood contains urea, and c titious materials, which have accumulated there in consequence of the secreting tissues of the kidney; that the blood thus contamina in its passage through the systematic capillaries, and that the hypertr ventricle results from the increased efforts which are necessary in ord this impediment. The chief facts which lend support to this exp phenomena in question are briefly these:—It has been demonstrate one species of excrementitious material has precisely that effect up tion which I have supposed to result from the accumulation in the b excreta. Dr. Reid has shown that the exclusion of air from the l and the consequent transmission of black blood into the arteries, has

an inflammatory condition of the brain—cases of hydrocephaloid disease, as they have been called by Marshall Hall, who was, I believe, the first to publish an account of the affection in question. Dr. Gooch's valuable essay on this subject is so well known, that I scarcely need refer to it, except for the purpose of recommending it to the notice of any one who, perchance, may not have met with it. The mode of determining the true nature and the appropriate treatment of these cases, is to observe, not only the heaviness of the head and the drowsiness, but also the accompanying symptoms, and the previous history of the child. We are to take care, as Dr. Gooch advises, "that a drowsy child, who is languid, feeble, cool, or even cold, with a quick weak pulse, should not be treated by bleeding, starving, and purging, like a drowsy child who is strong, plethoric, has a flushed face, and a heated skin." When, in addition to the symptoms of exhaustion before mentioned, we learn, as we often shall on inquiry, that the child has been recently weaned, or that, from some cause or other, its food has disagreed, that the bowels have been disordered and relaxed, or that the patient's strength has been reduced by active medicine or by leeching, little doubt will remain as to the nature of the case, and as little as to the necessity for nutritious food, for stimulants, and for tonics. I shall have frequent occasion to insist upon the importance of directing attention to the remote causes of disease, as a means of determining both its true pathology and its appropriate treatment.

I purpose now to illustrate the connexion between pathological science and rational therapeutics, by a consideration of hypertrophy of the heart.

It was formerly much more than at present the custom to speak, and even to write of hypertrophy of the heart, as if it were a disease *per se*, against which remedial measures were to be directed, without consideration of the cause of this structural change, or the possible consequences of injudicious attempts to remove it. We are not surprised to hear such language from non-professional persons, who frequently speak of themselves, or of their friends, as having "enlargement of the heart," and who appear to consider that this is a sufficient account of the disease, and one which will enable a physician to give an opinion as to its probable consequences. We cannot, however, but experience a feeling of astonishment, when we find, as we sometimes do, that even those who appear to consider themselves competent to improve the treatment of these diseases, disregard the very elements of the question. Not long since, there appeared, in a medical journal, a paper, in which it was proposed to cure hypertrophy of the heart by the inhalation of medicated vapours. It was maintained, that this method of treatment afforded great hopes of success, inasmuch as the remedy would speedily be brought into direct contact with the part most frequently affected,—viz., the left ventricle. Now, the obvious defect in this paper, is the absence of any allusion to the various causes, and the pathological significance, of hypertrophy of the left ventricle. There is no indication that the author of the paper at all appreciates the great difficulty in the way of curing hypertrophy of the heart, without a previous removal of the cause which gave rise to it, or the fatal mischief which might ensue, if, by any means, such a result were attainable.

A consideration of the various causes which give rise to hypertrophy of the heart will suffice to show the unreasonableness of expecting to remedy, by any one method, a condition so diverse in its origin. I may state, *in limine*, that there is, probably, no exception—there is, certainly, no *proved* exception—to the rule, that hypertrophy of the walls of the heart results from continued or frequently repeated increased contractions of its muscular fibres. It consists in an increased growth of muscular tissue, and this results from the frequent and violent contractions of the heart, which are occasioned by a necessity for some additional effort to carry on the circulation. This growth of muscular tissue, in obedience to the demand for increased exertion, is one of the beautiful instances of those compensating and reparative processes with which the physiologist and pathologist are familiar. An illustration of the same beneficent law is seen in the firm and massy muscles of the blacksmith's arm, as compared with the flabby and undeveloped limbs of the tailor,—an instance, as we see, of supply being regulated by demand. Thus far, it appears, that hypertrophy of the muscular walls of the heart is a simple and easily intelligible phenomenon; but when we proceed to inquire into the various circumstances which may give rise to this demand for increased efforts on the part

of the heart, and the consequent hypertrophy of its muscular tissues, we find that these causes are numerous and very diverse; and it becomes apparent that our success in the treatment of this condition must greatly depend upon our ability to detect and to remove its originating cause.

Among the most frequent causes of hypertrophy of the left ventricle are, first, a diseased condition of the aortic valves, or of the aorta itself; and, secondly, such a diseased or imperfect state of the mitral valve as will permit the blood to regurgitate into the auricle. The result of each of these conditions is, that the left ventricle has to perform more than its natural amount of work, and, in consequence, its muscular walls acquire an increase of thickness. Narrowing of the aortic orifice, or a diseased condition of the arterial walls, exerts an obstructive influence upon the current of blood directly, while a diseased condition of the aortic or mitral valves, which permits of regurgitation, may cause an indirect, but equal impediment to the circulation, for the system demands a certain supply of blood in a given time; and as the blood which regurgitates either from the aorta into the ventricle, or from the ventricle into the auricle, in no way contributes to that supply, the amount of regurgitation, if it could be estimated, would be an index of the degree of extra ventricular contraction, either as regards force or frequency, or both, which is rendered necessary by this backward current. In each of the cases which I have mentioned, the hypertrophy of muscular tissue is a natural result of the increased demand for the muscular power which is required for overcoming an impediment to the onward passage of the blood.

In the cases to which I have now alluded, there is a very obvious mechanical cause, in the condition of the valves or of the arterial walls, for the impeded circulation, and the consequent hypertrophy of the left ventricle. But there is a numerous and important class of cases in which there exists a very marked degree of hypertrophy of the ventricles without disease of the valves or of the aorta; in short, without any obvious cause of impediment to the circulation. This form of hypertrophy occurs, for the most part, in connexion with chronic diseases of the kidney; and it will, perhaps, be remembered, that in the "Gulstonian Lectures," which I had the honour to deliver last year, I entered at some length upon the consideration of this subject, and then suggested what appears to be the most reasonable explanation of hypertrophy of the left ventricle, when it occurs in connexion with chronic renal disease, and unassociated with disease of the valves or large arteries. The subject is one of much interest and importance, as well to those who are studying the connexion between morbid phenomena, as to those who are engaged in the treatment of disease. At present, I can only refer to such of the leading facts and arguments as will suffice to show in what way the question bears upon our present inquiry—the relation, that is, of therapeutics to pathology.

The connexion between hypertrophy of the left ventricle and chronic disease of the kidney was first pointed out by Dr. Bright, whose observations upon this point are in strict accordance with those which have been since made by others. Dr. Bright found, that, in 52 out of 100 cases of renal disease, which were examined after death, there was hypertrophy of the heart. In 34 of these 52 cases of hypertrophy no valvular disease whatsoever could be detected, but, in 11 of these 34, there existed more or less disease in the coats of the aorta; and this disease may perhaps have impeded the circulation, and so have occasioned hypertrophy; still, however, there remain 23 cases without disease either of the valves or of the arterial coats, without, as Dr. Bright remarks, "any probable organic cause for the marked hypertrophy generally affecting the left ventricle." Now, the most probable explanation of these cases is this, that the blood contains urea, and other excrementitious materials, which have accumulated there in consequence of degeneration of the secreting tissues of the kidney; that the blood thus contaminated is impeded in its passage through the systematic capillaries, and that the hypertrophy of the left ventricle results from the increased efforts which are necessary in order to overcome this impediment. The chief facts which lend support to this explanation of the phenomena in question are briefly these:—It has been demonstrated, that at least one species of excrementitious material has precisely that effect upon the circulation which I have supposed to result from the accumulation in the blood of urinary excreta. Dr. Reid has shown that the exclusion of air from the lungs of a dog, and the consequent transmission of black blood into the arteries, has the immediate

effect of causing great distention of the arteries, and an increased pressure upon their walls, while there is a corresponding diminished pressure upon the walls of the veins. It is evident, therefore, that this black, unaërated blood is impeded in its passage through either the minute arteries or the capillaries. The final result of the continued exclusion of atmospheric air from the lungs is a complete arrest of the blood in the pulmonic capillaries, as proved by the great engorgement as well of the lungs as of the right side of the heart and of the veins, and the comparative emptiness of the left cavities and the arteries.

It appears, therefore, that an excess of carbonic acid in the blood occasions an impeded circulation through the entire capillary system, and that the impediment increases until the blood is finally arrested in the capillaries of that organ whose office it is to eliminate the poisonous material. The very gradual process of asphyxia, which often results from emphysema of the lung and chronic bronchitis, exerts upon the right ventricle of the heart the kind of influence which a consideration of Dr. Reid's experiments would have led us to anticipate: the walls of that cavity usually acquire such an increase of thickness and of strength as is rendered necessary by the impeded condition of the pulmonary circulation. We have here, then, another cause and another form of hypertrophy of the heart.

Returning now to the hypertrophy of the left ventricle, which occurs in connexion with chronic renal disease; the reasons for believing that it results from an impeded flow of blood through the systematic capillaries, are briefly these:—1st. The absence of any other obvious cause of the phenomenon; and, 2ndly, the analogy with the consequences of asphyxia,—an analogy which is strengthened by the observation, that the condition of the renal blood-vessels is such as to indicate that those forms of diseased kidney which give rise to an accumulation of urinary excreta in the blood, are associated with an impeded circulation through the renal capillaries, which is strictly analogous to the state of the pulmonary circulation in cases of asphyxia. The minute branches of the renal arteries and the Malpighian capillaries in the cases of chronic disease of the kidney to which I now refer, usually have their walls hypertrophied and thickened in a way which can be explained only on the supposition, that there has been a long-continued impediment of the circulation through the intertubular capillaries.—*Med. Times and Gazette, July* 2, 1853, *p.* 1.

2.—ABSTRACT OF EIGHTEEN CASES OF TYPHUS FEVER TREATED BY THE FREE EXHIBITION OF BRANDY.

Under the care of Dr. Todd.

[In all these eighteen cases the type of the disease was of the well-marked typhus character—presenting the following symptoms previous to the commencement of the treatment:]

A copious eruption of scattered measle-like spots (mulberry or typhus rash); bowels either confined or but slightly relaxed; great prostration of strength; delirium (in six cases, coma was present); a small and very rapid pulse. It may be well to premise, that they were treated as is done in almost all general hospitals in the open wards, their beds being purposely arranged so as to occur at some distance from each other, in order to prevent the accumulation of contagious emanations. The treatment pursued consisted in administering, either every hour or every half-hour, day and night, from half an ounce to an ounce of brandy, with a draught every second hour, containing sp. æth. chlorici ℥x., ammoniæ carbonatis gr. v., aq. pur. ℥j. The patients were induced to drink as much strong beef-tea as possible; the head was always shaved; and, in most, a blister was applied to the scalp. We are indebted to the careful observations, noted daily by Mr. Macnamara, the clinical assistant in charge of the cases, for the whole of the particulars respecting them. The first to which we shall allude was a very severe attack, and happened to an elderly and unfavourable subject; the beneficial effects of the alcoholic stimulant is strikingly shown, and there even appears some cause to infer the superiority of brandy over wine.

Elizabeth B., aged 70, was admitted June 16, 1853. She complained of severe *headache,* and of much pain in her limbs; was very deaf, and could see but very

indistinctly. Her daughter stated, that the two latter symptoms had commenced four days previously, and the illness was of about a fortnight's duration, having begun with aching pains in the limbs and head, and great prostration of strength, followed, after four or five days, by several successive shivering fits. Pulse 123; tongue thickly furred.

℞. Tinct. opii ℥xx. h. s. sumend.

℞. Sp. am. arom. ℥xx., aq. pur. ʒiss. 4tis. horis sum.

18th.—The skin and chest of abdomen is covered with an eruption of measly spots. The patient has been delirious during the night; her tongue is dry and furred, pulse 124; the bowels have acted but once since admission. Pt.

19th.—Has been very delirious; pulse 126; other signs as before.

℞. Am. carbon. gr. v., sp. æth. chloric. ℥xv., aq. ʒiss. 3tis horis. Wine ʒviii. per diem.

21st.—Much worse; lies in an almost comatose condition, and allows her urine and fæces to pass into the bed. Pulse 130. The head is to be shaved, and a blister applied. Instead of the wine, half an ounce of brandy is to be given every half-hour.

Rep. mist.

22nd.—Pulse 124. The half comatose condition still continues, and is only interrupted by low, muttering delirium.

23rd.—Pulse 120. The coma is passing off, and the delirium is less constant during its intermissions. The spots have now entirely disappeared from the skin. The patient takes her beef tea much better than she did.

24th.—Pulse 114. This morning the head symptoms are much less severe; and, on being questioned, the patient occasionally returns rational answers. The bowels act daily, but are not loose. To continue the same treatment.

25th.—Pulse 96. The skin for the first time is moist. The patient states that she feels much better, and can be got to understand clearly where she is, which has not been the case on any previous occasion since her admission.

26th.—Pulse 90. To take half an ounce of brandy every two hours.

From the last date she continued to improve. To aid her convalescence, quinine and other tonics were administered. She was discharged quite well six weeks after admission.

In the next case the progressive decrease in the frequency of the pulse, subsequent to the employment of the stimulant, was equally well marked as in the above. It occurred in a much younger subject.

[One case out of the eighteen terminated fatally. In the seventeen remaining the following is the condition of the circulation, and the influence of the treatment upon it.]

On the day that the administration of brandy, etc., was commenced, the pulse had, in five cases, a frequency of 136 per minute; in three, of 126; in seven, of from 120 to 126; and in one, of 116. After the measures above specified had been pursued for four days, the pulse had, in eight cases, fallen to 92; in five others, it had fallen below 92 on the fifth day; and, in the remaining four, to below 90 on the sixth. Again, taking the day on which the treatment was commenced as our starting point, the skin, previously hot and dry, relaxed, and became moist and perspirable on the fifth day, in nine cases; on the sixth day in five cases; on the twelfth day, in one case; and in the remaining two the date of this crisis was not recorded.

The degree of success exhibited by the above facts is, we suspect, very considerably beyond that usually obtained in cases of so severe a type as those under consideration, and is very encouraging to a pursuance of a similar plan of treatment in future. That the success did really depend on the treatment, appeared to be conclusively evidenced in several cases, in which the pulse, progressively increased in frequency up to the time that the brandy was ordered, steadily fell from that day forwards. The relapses of one or two, in consequence of the accidentally inefficient administration of the remedy, also afford important support to the same conclusion. In respect to the numerical age of the fever at which the brandy treatment was commenced, it varied so much in the different cases, that there does not appear to be any practical advantage in attempting to state it. In all, however, the first stage had passed, and low "typhus" had become fully developed.—*Med. Times and Gazette, Aug. 27, 1853, p. 217.*

3.—QUININE IN FEVER.

By Dr. Robert Gee, and William Eddowes, Esq., Medical Officers of the Liverpool Fever Hospital.

[Cinchona bark has been used in continued fever since the period of its introduction into England. Sydenham did not use it in continued fever, but Morton, his contemporary, gave it boldly, ʒj. every three or four hours, with great success.]

Dr. Sims expressed himself thus:—"I solemnly declare that I never saw a case of nervous, low, putrid, or malignant fever, when the patient could be brought to take this medicine in sufficient quantity, turn out unfortunately." He did not rely on less than six or seven ounces given in little more than two days. Drs. Fordyce, Armstrong, and others, were of an opposite opinion.

[Our readers are aware, that under the form of sulphate of quinine, Dr. Dundas has recently introduced it into this country as a remedy for the ordinary forms of continued fever. The character of the disease is the ordinary one, presenting no peculiarities.]

The most frequent complication was subacute bronchitis; a few cases of pneumonia and a few of pleurisy occurred. Bowel complication of a serious nature was extremely rare.

Before administering the quinine it is well that the patient should have an emetic, for of itself it is beneficial, and after its operation the quinine rarely disagrees with the stomach. It may be given at all stages of the disease, unless there be great prostration. The dose of the quinine is from three to ten grains every two or three hours, given in the form of powder. From the commencement the patient is allowed three pints of milk and one of beef-tea daily, and, if at a late stage of the disease, or the patient has been a drunkard, wine or whiskey is given. Purgatives do not appear to be necessary, for the emetic usually relieves the intestines as well as the stomach; and if constipation should occur, a simple enema is generally sufficient to remove it.

In those cases where the quinine treatment was commenced during the first seven days of the fever, the average duration of the disease was 4·4 days after the first administration of the remedy; when during the second week, 5·8 days. From cases treated during or after the third week no inference can be drawn, the disease having then nearly run its course.

We subjoin a few cases for the sake of illustration. The cases in which the quinine was given appeared to be distinctly *idiopathic* fever; whether it will exert a beneficial influence in symptomatic fever is quite a distinct question which we are not in a position to answer.

Edward C——, aged twenty-two, bricklayer's labourer, apparently a strong man, admitted March 19, 1852; was living in a street near the docks. Five days ago, while at work, he was attacked with the ordinary symptoms of fever, which increased till his admission. At present, March 20th, he has a hot skin; great thirst; no sleep for some nights; pulse 104, full, but not strong; headache not severe; tongue with a thick yellow fur at base; bowels open. Over the surface generally, but more particularly over the abdomen and thorax, are numerous reddish, purple spots, about the size of the head of a large pin, totally unaffected by pressure. To have directly a scruple of ipecacuanha powder, a grain of emetic tartar, followed by the sulphate of quinine in powder, five grains, every two hours. Ten grains of Dover's powder to be taken at bed-time, to procure sleep. Diet to consist of milk, arrow-root, or beef-tea, according to choice.

March 21st.—Feels better; slept well; tongue much cleaner; pulse 72, soft; skin cool and moist; countenance natural; no thirst; no head-ache. Appetite not very good, but he takes his milk and some arrow-root. To take the quinine three times a day.

22nd.—Feels much better; tongue slightly furred; skin bathed in perspiration; rash fading, of a brick-dust colour. Omit the quinine. To take a mixture of quassia and ammonia.

25th.—Rash gone; tongue still a little furred; does not feel ill in any way. Was discharged on the 29th.

Example of treatment begun during the second week of the disease:—Mary C——, *aged sixteen;* admitted May 8, 1852; has been ill thirteen days. (Her mother was *admitted at the same time, and* died under the saline treatment.)

May 9th.—Lying on her back, breathing quickly; great delirium, trying to get out of bed; extremely thirsty; tongue dry, but not furred; pulse 132, weak; "great pains everywhere, but more particularly in her legs;" skin covered with a purplish, red, measly eruption, of a pungent heat. To have an emetic, followed by six grains of sulphate of quinine, and one-sixth of a grain of opium, every two hours. Milk, arrow-root, or beef-tea, according to choice, and four ounces of wine daily.

10th.—Slept more comfortably, did not get out of bed at all; says that she feels a great deal better; pulse 110; tongue still dry; skin extremely hot; was relaxed after the emetic yesterday, the motions being passed in the bed. Continue.

11th.—Countenance improved; no delirium; slept fairly; tongue not so very dry as before; says she is better; is deaf; pulse 112; skin still hot; great thirst. Continue.

12th.—Slept fairly; breathes comfortably; has passed one or two motions in bed; pulse 88; skin moist, and heat greatly diminished; tongue moist, but coated with a light yellow fur; says that she feels still better. To take one powder every three hours.

13th.—Rash fading; sleeps fairly; bowels rather loose; and some abdominal tenderness. To have an injection of starch, with twenty drops of laudanum, given three times in the day. Continue.

14th.—Countenance natural; tongue clean, pulse 84; slept well; appears to be quite free from fever. Omit the quinine, and take a mixture of ammonia and quassia. A chop daily. Was discharged on the 26th of the same month.

Thomas D——, aged eighteen; a groom; had good general health; admitted Dec. 9, 1851. Three weeks ago did not feel well and was in bed a few days, then felt better, and went to his work for a week. Was again laid up, the attack commencing with rigours and headache. Has been ill with the last attack nine days; delirium four days; slept a little, but never soundly; bowels open. Previous to admission had taken nothing but slops, with the exception of yesterday, when he had a very small allowance of beef-tea for the first time, and a glass of wine, to-day, before his removal to the hospital.

Two hours after admission.—Lying on his back; lips separated; pupils dilated, though in a strong light; motion passed in bed; occasional involuntary movement of the hands; great delirium; takes no notice of questions addressed to him; will not or cannot protrude his tongue; jaw fixed; is breathing easily; pulse 100, soft; lips dry, sordes; skin moist, with perspiration. To have an emetic, followed by the quinine, ten grains every two hours; milk, arrowroot, or beef-tea.

10th.—Ten o'clock: Has taken five doses; slept from five to six o'clock this morning; can protrude his tongue, which is brown and somewhat dry; can answer questions; a little deaf; has taken a little arrowroot and milk; has passed no urine since admission. To have three ounces of brandy in the course of the day. Seven P. M.: Slept a little in the course of the day; has passed no urine: a catheter was passed, and about four drachms of turbid urine came away; has had one involuntary motion; is lying on his back, moaning frequently, and when asked where he has any pain, replies that he does not know; pulse 96; has taken about half a pint of beef-tea. To have hot water to the feet, and mustard poultices to the loins; half a grain of the acetate of morphia.

11th.—Greatly improved; passed an abundance of water in the night and this morning; tongue moist, with a thin, white fur; slept very well; answers questions more promptly, and says he feels a deal better. Continue the quinine.

12th.—Slept well; is in a profuse perspiration; is free from pain; enjoys his food; no delirium; pulse 88, soft; still somewhat deaf. To have the morphia at bed-time, and to take the quinine every four, instead of every two hours.

13th.—Slept well; does not "feel anything the matter" with him; abundant perspiration; motions natural; good appetite; tongue quite clean. To take five grains of quinine three times a day. Continued to improve, and went into the country on the 19th.

This man was living in a gentleman's house till admission.

Daniel H——, middle aged, colouring man; admitted Dec. 7th, 1852; has been ill fourteen days; is in a state of great debility; exceedingly restless and delirious; eye wild, but not injected; subsultus tendinum; tremor of hands; great thirst; pulse weak; tongue furred at base, moist; skin hot, but not dry; covered thickly over

abdomen and thorax with purplish red spots, from a pin's point to a large pin's head, slightly raised and unaffected by pressure; is deaf. To take ten grains of quinine every two hours, and have six ounces of brandy in the twenty-four hours; milk, arrowroot, or beef-tea.

Dec. 8th.—About the same. Took the powders during the day time, but not by night. Had some sleep; is very deaf; still restless; still subsultus and tremor of the hands; thirst less; skin not so hot; bowels opened once; pulse 80, stronger. Continue the quina and brandy; half a grain of acetate of morphia at bed-time.

9th.—Passed a comfortable night; restlessness gone; countenance improved, becoming more natural; still subsultus; skin moist, and not above the natural temperature; still deaf; pulse 80; enjoys his milk and beef-tea; rash becoming more of a purple tint; tongue dry in the centre. Continue the morphia at night, also the brandy and the quinine every four hours.

10th.—Slept well; still some subsultus; countenance much improved; pulse 80; skin moist; delirium gone; tongue as before. Continue quinine, brandy, and morphia.

11th.—Is quiet and comfortable. Continue the quinine and brandy; omit the morphia.

12th.—Sleeps night and day; has no pain except that he feels sore from lying; has tinnitus aurium; pulse 80, skin cool and moist; takes all his milk and beaf-tea, but cannot eat bread; tongue still somewhat dry in the centre. Omit the quinine, and take a mixture of ammonia and quassia three times a day.

13th.—Tongue moist, slightly furred; sleeps well; feels better.

16th.—Rash, which had been gradually fading, has entirely disappeared. Convalescent.

Of sixty-one uncomplicated cases, eleven were under the treatment during the first seven days: of these, two were free from fever on the second day after treatment; one on the third day; two on the fourth day; three on the fifth day; one on the sixth day; one on the seventh day; one on the eleventh day. In twenty-four, the treatment was commenced during the second week: of these, one was free from fever on the second day after treatment; two on the third day; five on the fourth day; seven on the fifth day; three on the sixth day; two on the seventh day; one on the eighth day; two on the ninth day; one on the twelfth day. In twenty-six, the length of time that the fever had previously existed was not ascertained: of these, five were free from fever on the second day after treatment; six on the third day; three on the fourth day; four on the fifth day; three on the seventh day; one on the eighth day; three on the ninth day; one on the twelfth day.

The quinine was also given in twenty-seven complicated cases, the chest being involved in twenty-two, the abdomen in two, and in three both the abdomen and the chest were affected. Of the twenty-two cases where the chest was involved (the affection being, as before remarked, generally subacute bronchitis), fifteen were treated during the first week: of these one was free from fever on the third day after treatment; one on the fourth day; two on the fifth day; four on the sixth day; two on the eighth day; one on the ninth day; two on the tenth day; one on the eleventh day; and one on the twelfth day. In seven the treatment was commenced during the second week: of these two were free from fever on the third day; two on the fourth day; one on the sixth day; one on the seventh day; one on the tenth day.

The remedy employed in the above complication, in conjunction with the quinine, was a large mustard jacket placed round the whole of the chest both back and front, applied twice or thrice daily, and left on as long as the patient could bear it. It possesses the advantage of not weakening the patient, at the same time being an excellent counter-irritant. Great care should be taken, more particularly in winter, to prevent the patient taking fresh cold while at the night chair; in hospitals we think the use of the bed-pan the best preventive.

Two cases occurred with abdominal complication: of these one was admitted on the ninth day of the fever, and recovered on the sixth of treatment; the other was admitted on the fifth day of fever, and recovered on the seventh day of treatment.

Three cases occurred with abdominal and chest affections: of these, two were admitted on the fifth day of the disease, and were free from fever on the fifth day of *treatment;* one admitted on the eighth day of the fever was free from it on the tenth.

Thirteen cases in which the quinine was given proved fatal: of these five died

within forty-eight hours after admission. Of the remaining eight, one was admitted on the eighth day of fever, and died on the eighth of treatment. One was admitted on the fifth day of fever, and died on the sixth of treatment: this man had persistent hiccough, congestion of lungs, and had had a severe attack of fever seven months before. One was admitted on the seventh day of fever, and died on the tenth of treatment: this patient had been allowed nothing but barley-water previous to admission; tubercles in the right lung. One was admitted on the fourteenth day of fever, and died on the fifth of treatment: the quinine seemed to produce no effects. One was admitted on the ninth day of fever, and died on the sixth of treatment: this patient had two kinds of spots, the one disappearing, the other unaffected, by pressure; had been a hard drinker. One was admitted on the fifth day of fever, and died on the eighth of treatment: a woman seventy-six years old; this was the only fatal case where the pulse was reduced below 100. One was admitted on the fourteenth day of fever, and died on the fourth of treatment; the quinine did no good. One was admitted on the eighth day of fever, and died on the third of treatment: had involuntary motions when admitted.

The effects of the quinine on the pulse is, in favourable cases, sometimes very remarkable: in one case it fell from 104 to 72 in twenty-four hours; in another from 140 to 84 in seventy-six hours; but generally speaking the reduction is gradual and steady. In cases which terminated fatally the quinine, with one exception, never reduced the pulse below 100; it sometimes fell from 148 to 124, from 112 to 108, from 140 to 114, but not below 100. None of the fatal cases were under treatment before the fifth day. In complicated cases the effect on the pulse is less marked than in those which are free from complication.—*Lancet, July* 2, 1853, *p.* 3.

4.—CLINICAL REMARKS ON YELLOW FEVER.

By Dr. W. J. Cummins, Surgeon R. M. S. "*Medway.*"

[Dr. Cummins observes that the small doses of quinine, recommended in our Pharmacopœias, have no effect in yellow fever, and that many cases are lost from the dread of pushing the remedy to the necessary extent.]

Most persons believe that when deafness is produced there is no further indication for its use; but this is a fatal error, as in most cases it is necessary to push it for a much longer period. It is difficult to lay down any fixed rules as to the quantity that should be given in any individual case; but if a well-founded and long-established rule of medicine is borne in mind, that in certain diseases ten times or more of the ordinary dose of a medicine is required to produce its effect, and that yellow fever is one of those diseases, it will be found that the best guide for the administration of quinine is the *amount of nervous depression present.*

Another general rule of medical science must also regulate the administration of this medicine—that depression follows the excitement of all stimuli. Now it is certain that quinine acts as a stimulus to the nervous system, and that its action as such is temporary, and invariably followed by depression. Now as long as the yellow-fever poison is in the system, anything which promotes depression of nervous action must increase the disease; it is therefore obvious that the primary or stimulant action of this medicine must be kept up by continuing its administration until the poison has passed off the nervous system, which it is certain to do in the third stage; for, as I have mentioned, it has its limit of operation like other poisons, and wears itself out in three or four days, leaving only its effects behind. It is true that the more quinine given, the greater will be the depression when its use is discontinued; but if this occurs after the poison passes away, it will be a depression *sui generis*, and not an aggravation of the specific depression induced by the poison. I do not mean for a moment to make light of the depression which follows the use of large quantities of quinine; on the contrary, I consider it as the probable source of the tedious convalescence which *occasionally* is observed after yellow fever, and which renders removal from the tropics necessary. But I would say that by comparison with the specific depression of yellow fever it becomes trivial. We have a choice of two evils before us, either by pushing quinine to its full extent, to increase

the depression of convalescence, which can be cured by change of climate, &c., or to increase the specific depression of the poison, by allowing the quinine depression to exist along with it; and who that knows the awfully destructive nature of the yellow-fever depression would hesitate in choosing the first? It may be supposed from my remarks upon the duration of the poison that I consider it a disease which, when once established, must go on for a certain number of days, but this is far from being my opinion; for I have frequently seen a most violent attack cut short by thirty or forty grains of quinine administered *early*, and perhaps repeated in an hour. Now, the possibility of such an occurrence as this seems to contradict my remarks upon the danger of leaving off quinine too early; but there is a vast difference between cutting short a disease and only suspending its action, and the danger of the after depression of quinine is not to be apprehended in the former. If a patient is seen *very early*, and we determine upon attempting to cut short the disease, it is better to give thirty grains of quinine and twenty grains of calomel immediately, and another similar dose conjoined with five grains of James's powder an hour afterwards. This should be followed in two hours by an ounce and a half of castor oil. It is extremely probable diaphoresis will then be established, the pain in the head and back will have subsided, the congestion have been removed, the bowels well opened, and all the functions perfectly restored to health. This is cutting short the disease, and we need not fear the depression which follows the quinine in such a case: but it is no easy matter to determine exactly whether the disease is stopped or suspended; and we must watch the case closely for at least twenty-four hours, and if the symptoms are not completely removed, we have lost time and injured our patient by permitting the secondary effect of the quinine to become established, so that an attempt to cut short the disease is not without a certain degree of risk; at the same time, if tried *early*, it very frequently succeeds. It must therefore remain a question for the physician to decide whether the symptoms are sufficiently recent to admit of their cause being rooted out of the system, and my own experience limits the attempt to five or six hours. We must not allow an idiosyncrasy to interfere with the full use of quinine.

I was called some time since to attend a gentleman who had contracted bilious remittent fever at Chagres. He told me that during some slight illness at New York he had taken a few grains of quinine, which almost drove him mad, producing most violent nervous symptoms and palpitation of the heart. Here was an idiosyncrasy that under ordinary circumstances would have completely contra-indicated the use of the medicine; but the following train of reasoning induced me to give it a trial:—

Quinine causes increased nervous action, and this gentleman, when in New York, was violently affected by a very small quantity. It follows that his nervous system must have been more than ordinarily excited, even before he took the medicine; this was the idiosyncrasy.

But now, on the contrary, he is suffering from a disease of diminished nervous action; and provided the medicine is so regulated as only to bring nervous action to the natural standard, there is no reason to dread a recurrence of the violent symptoms he suffered from in New York. I gave it in large doses; he completely recovered, and probably owes his life to the quinine, which did not cause a single unpleasant symptom. This is a most instructive case, as it throws some light upon the nature of an idiosyncrasy. The great bulk and very bitter taste of quinine renders its toleration in large doses by an irritable stomach a matter of extreme difficulty; indeed, before I found out my present mode of giving it, I used to consider it a matter of impossibility to have the requisite quantity retained.

It is necessary to combine it with calomel, sometimes with James's powder, for reasons which I shall mention by and by, when I come to the treatment of the secondary effects of the poison. These powders should be mixed with a sufficient quantity of water to form a soft pill, then a dessert-spoon must be lined with a thin layer of jelly, so as to form a bolus which can be gulped down without taste. These particulars may be considered unworthy the attention of a medical man, but those who have treated as many cases of yellow fever as I have will see their value.

If vomited even when administered in this way, as it sometimes is, a large *mustard plaster must be applied to* the epigastrium, and another dose given. This

must be repeated, if necessary, again and again, and I have always succeeded by perseverance; but occasionally, it is well to give a drachm of sulphuric ether, and eight or ten drops of creasote, to allay any spasm that may be present, and pause an hour before again trying the quinine.

The diagnosis of yellow fever among the better classes, even at its commencement (provided an epidemic is present), is easy, but on board ship, especially in the West Indies, where rum can be had for almost nothing, and cannot be kept from sailors, it is nearly impossible to distinguish between the morning effects of a night's debauch and the fever, more especially as the depression following drunkenness often lends vigour to the poison lying dormant in the system. The best way is to treat all cases which exhibit symptoms of congestion (no matter what may have been its cause) as I have recommended for cutting short yellow fever, and generally a few hours will decide whether it is the drunkenness of that disease, or of rum; and sixty or seventy grains of quinine will do the latter no harm, and the calomel still less, for it rarely salivates in large doses followed by castor oil. But, if our patient is one we know to be a steady character, and that the symptoms are sufficiently decided to admit of an immediate diagnosis, our first care must be to remove him from the pestilential locality in which he became poisoned, in order to prevent its continued operation upon his system, for it is sufficiently obvious that the depression already existing disposes the system to the reception of a further supply of the poison, and that medical skill has not a fair chance without removal from its influence.

Except under peculiar circumstances, it must be presumed that the sleeping-place is the spot where the poison has been received, because during sleep all the functions of the body are carried on with diminished vigour, and the whole system thus exposed to the injurious action of external agents. We, therefore, recommend immediate removal from the house or cabin of residence, and a change to the highest and best ventilated spot practicable. It is very rare for a medical man to have an opportunity of seeing a case of fever until six or eight hours from its commencement, except on board ship, and even then not very frequently; so that in speaking of the treatment by quinine I shall suppose the disease to have gone on unchecked for that period. The first stage will probably then have terminated, and that of reaction become established; but, no matter whether in the first or second stage, there is sure to be present an indication for quinine, and we must commence its use immediately.

I give twenty grains every second hour until four doses have been taken, when, if deafness has commenced, which it probably has by this time, I pause until it begins to subside, which it usually does in about four hours. I then give ten grains of quinine every second hour, and continue it according to the indication given by headache, pain in the back, congestion, and muscular prostration, as well as the state of the secretions; but I never trust much to an improvement in the pulse or tongue. This is the routine treatment I generally adopt to fulfil the primary and most important indication; but the patient must be watched closely, as the dose has often to be increased or diminished.

It is sometimes necessary to use quinine late in the disease, a fact with which I was unacquainted until the other day during the present epidemic, on board the *Medway*. One of the officers was attacked very severely, but recovered almost entirely in a few days, and was able to walk about the main deck. Unfortunately at this time we had to coal at St. Thomas. Two ships were sent alongside for that purpose, and completely shut out the ventilation from the ports forward; at the same time it rained incessantly, making it necessary to put on the hatches. I never felt anything equal to the heat, closeness, and dampness of the atmosphere, or the noisome smell of the negroes; it was certainly enough to induce disease. The day after, my patient was attacked with nervous depression, congestion, suppression of the secretions, hemorrhage, black vomit, &c., and died without any attempt at reaction. I think life might have been saved by a return to the large doses of quinine, and I shall certainly prescribe it in another case of the sort. His convalescence may have been a remission, or rather intermission; but if so, it was the first time I have observed either. During convalescence I always give three grains of quinine, three times a day, in wine, with a view to preventing the secondary action of the large doses becoming established too suddenly. It seems to ease off

the over-excited nervous system "handsomely," a
the appetite.

I shall conclude this paper by saying that I ha
lactic with much success. Indeed I now make a
recently arrived from Europe, especially midshi
tropics before. I use it in the doses recomme
Kingston, Jamaica—three grains twice a day,
1853, *p.* 75.

5.—PRACTICAL OBSERVATIONS ON TREATMENT WITH SPIRITS

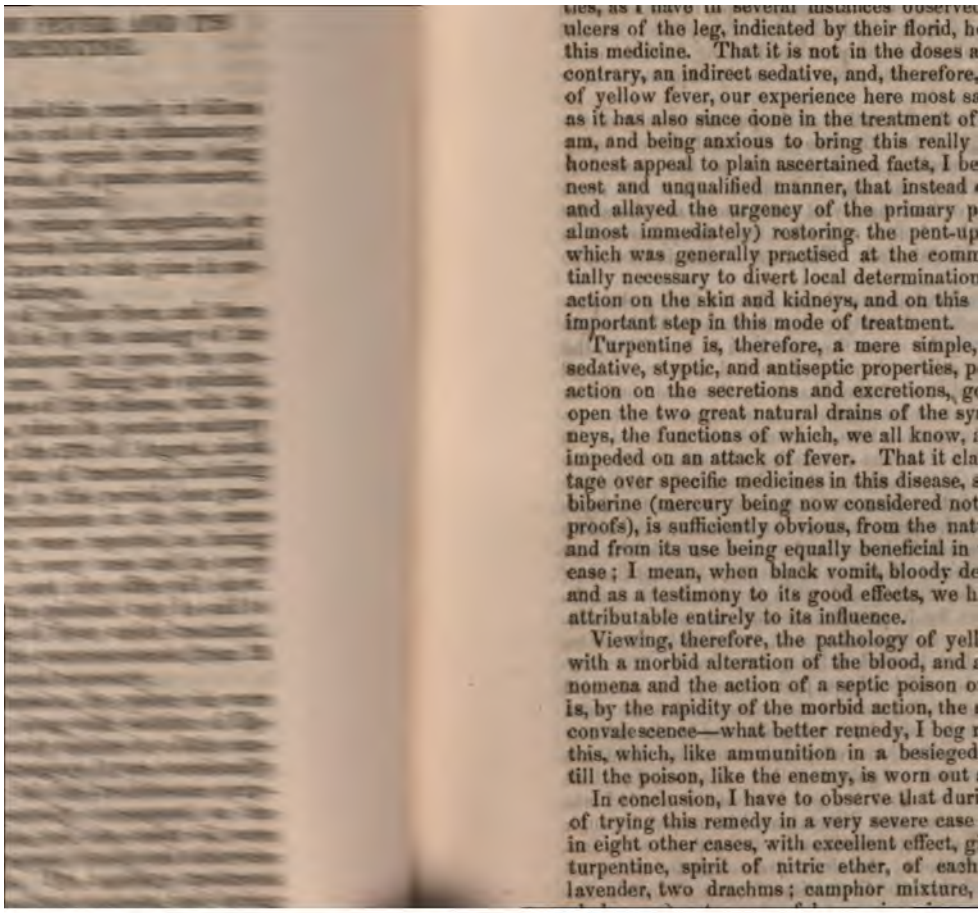
By James Laird, Esq., E

[To Dr. Gilbert King is due the credit of hav
remittent fever. Mr. Laird is of opinion that th
diathesis, but a blood poison from external inf
secondary. Hemorrhages from the nose, mouth
proved that the blood was in a dissolved and de

It appears natural to conclude that the blood
rather at the commencement of the attack, becon
by the non-elimination of the different excretion
tain forms of jaundice, in milk fever, and diseas

With this view, therefore, in regard to the p
is good reason to believe also of cholera, suppo
action of certain poisons on the system, I will
sistency and reasonableness of the turpentine n
it was first prescribed by Dr *King*, in five very
view solely, I believe, of *restraining* passive hem
influence was so strikingly observed. This hapj
a month after the fever had broken out; a ra
general and local bleedings to a large extent, h
tised with very unsatisfactory results. After t
alluded to, all of whom [illegible] recovered
had black vomit), the turpentine was afterward
stage of the disease, with what success [illegible]
When I joined the hospital [illegible] of Sept
have been at its height, and there were [illegible]
The general mode pursued [illegible]
to 20 ounces), followed by [illegible]

If the patient had received [illegible]
cleared out by a purgative [illegible]
som salts, and the turpentine [illegible]
phorated water three times [illegible]
administered in combination [illegible]
tom was happily of but [illegible]
application of blisters. [illegible]
occasionally combined with [illegible]
vitiated dejections, or to an [illegible]
comprised sinapisms and bl[illegible]
the stage of debility, wh[illegible]
principal remedy being, ther[illegible]
nothing else was given, I [illegible]
in bilious remittent fever, but [illegible]
cated by, the symptoms during [illegible]
following reasons: First, the [illegible]
doubtless, on some change [illegible]
ing fluid; secondly, from the [illegible]
tions, particularly that of the [illegible]
having been particularly obs[illegible]
proved by the frequently [illegible]



ties, as I have in several instances observed
ulcers of the leg, indicated by their florid, h
this medicine. That it is not in the doses a
contrary, an indirect sedative, and, therefore,
of yellow fever, our experience here most st
as it has also since done in the treatment of
am, and being anxious to bring this really
honest appeal to plain ascertained facts, I be
nest and unqualified manner, that instead
and allayed the urgency of the primary p
almost immediately) restoring the pent-up
which was generally practised at the comm
tially necessary to divert local determination
action on the skin and kidneys, and on this
important step in this mode of treatment.

Turpentine is, therefore, a mere simple,
sedative, styptic, and antiseptic properties, p
action on the secretions and excretions, g
open the two great natural drains of the sy
neys, the functions of which, we all know,
impeded on an attack of fever. That it cla
tage over specific medicines in this disease,
biberine (mercury being now considered not
proofs), is sufficiently obvious, from the nat
and from its use being equally beneficial in
ease; I mean, when black vomit, bloody de
and as a testimony to its good effects, we h
attributable entirely to its influence.

Viewing, therefore, the pathology of yell
with a morbid alteration of the blood, and
nomena and the action of a septic poison o
is, by the rapidity of the morbid action, the
convalescence—what better remedy, I beg
this, which, like ammunition in a besieged
till the poison, like the enemy, is worn out

In conclusion, I have to observe that duri
of trying this remedy in a very severe case
in eight other cases, with excellent effect, g
turpentine, spirit of nitric ether, of each
lavender, two drachms; camphor mixture,

[illegible] PYOGENIC

by [illegible]

[illegible] tissue might be [illegible] are present
[illegible] are given [illegible] a time [illegible]

Immediately after the [illegible] of the [illegible] necessary for the [illegible] of the [illegible] tissue. A [illegible] exist [illegible] of [illegible] tissue [illegible] of the [illegible]. [illegible] or accompany [illegible] [illegible] referred to [illegible] [illegible] of [illegible] [illegible] of [illegible] [illegible] [illegible] derange. If small, [illegible] [illegible] [illegible] size exceeds [illegible] of a [illegible].

The signs of inflammation [illegible] most [illegible] and the patient's [illegible] first [illegible] from the presence of the [illegible] observed fluctuation. Sometimes [illegible] h [illegible] and while [illegible] inflammatory signs [illegible] any evidence of [illegible] the first stage.

These [illegible] diseases [illegible] great [illegible] in a diseased condition [illegible] eruptions of [illegible] inflammation [illegible] a diseased condition which [illegible] to [illegible] [illegible] of a [illegible] of low organisation. The [illegible] in so many cases [illegible] a cold [illegible] disease condition of the [illegible] sit of many tissues [illegible] indicate the [illegible] of [illegible] of them. The [illegible] small size and the [illegible] ance, are [illegible] ting in the [illegible] nable to [illegible] stitutions, [illegible] then first [illegible] blishment [illegible] tissue incorporate [illegible] formed [illegible] they are not [illegible] the joints and [illegible] the viscera [illegible] described, [illegible] occur are the same [illegible] eased state [illegible] argued, that [illegible] affections may [illegible] ease seems [illegible] charges [illegible] of the more [illegible] sion "festers" [illegible] tem general [illegible] recognised [illegible] disseminated [illegible] Tessier [illegible]

of the "purulent diathesis:" and he defined it to
ism characterised by a tendency to suppuration i
Amid much pathologically erroneous, the doctr
an important truth, viz., that in a certain number
the febrile disturbance is established before any
quently, before any pus is formed, and by infere
cases, merely the effects of a special alteration of
tema is exuded out of which they are developed.

Although the morbid condition of the blood
effects, is common as a consequence of the acute s
without having been preceded by any other dise
affection.

Of this, the following case appears to me to of

A man, aged 31 years, of temperate habits, and
ing generally poorly for two or three days, beca
symptoms were—heat of skin, headache, a furred
exertion. On the evening of the 24th, a red patc
either leg. On the 25th, there was induration o
there was redness of the left shoulder, and a red
outer aspect of the left upper arm.

The mind was now confused.

He came under my care in University Colleg
time his mind was confused, and occasionally wand
tremulous, and there were now and then some tw
He was rather restless, and slept but little. Th
plexion was thick, and rather sallow. The tong
edges, and on its dorsum was a little dirty fur.
resonant, but not tender. He passed, during tw
pulse was 96, moderately full, but rather weak.
Red patches—the redness gradually shading int
some indurated, others not—were seated on the
calf of the left leg, the anterior aspect of the left
of the right upper arm, and the centre of the righ

The whole surface was carefully inspected. T
suppuration at any spot; no redness or tendernes
in the vicinity of the red spots, nor, so far as coul

There was no cough. The respirations were 2

Time will not permit me to detail the daily no
that many other red patches appeared at various
ties,—that pus was evacuated from two seated on
that fluid was effused into the knee-joints, and pr
that at no time was there reason to believe that
purulent deposits. The patient recovered compl
month from the first symptoms of illness.

The following is the abstract of a case of thi
quently to measles:—

A boy, aged four and a half years, was admitt
ward of the hospital for sick children, in August l

About a week after the disappearance of the
having been free from symptoms of illness, the wr
then an abscess formed in the subcutaneous tissue
lections of pus formed on the dorsum of the right
over the left elbow-joint, under the right glutæu
about the right psoas, and in the left hip-joint; an
from the ears. He died about five weeks after the

No purulent fluid was found in any internal orga
was made by my friend, Dr. Ballard.

In these cases, as in *the majority of those belong*
us tissue *were exclusively the seats o*
ome suc *ever, abscesses are found*
dly sn *y* in number, and in a m

the over-excited nervous system "handsomely," as sailors say, and b the appetite.

I shall conclude this paper by saying that I have lately used quinin lactic with much success. Indeed I now make a point of giving it t recently arrived from Europe, especially midshipmen who have nev tropics before. I use it in the doses recommended by my friend, J Kingston, Jamaica—three grains twice a day, taken as bitters.—*L* 1853, *p.* 75.

5.—PRACTICAL OBSERVATIONS ON YELLOW FEVER. TREATMENT WITH SPIRITS OF TURPENTIN

By James Laird, Esq., Edinburgh.

[To Dr. Gilbert King is due the credit of having first used this rem remittent fever. Mr. Laird is of opinion that this disease is not of an diathesis, but a blood poison from external influences—the organic secondary. Hemorrhages from the nose, mouth, and bowels, of a pas proved that the blood was in a dissolved and deteriorated condition.]

It appears natural to conclude that the blood, after its primary im rather at the commencement of the attack, becomes afterwards further by the non-elimination of the different excretions, as is known to tak tain forms of jaundice, in milk fever, and disease of the kidneys.

With this view, therefore, in regard to the pathology of yellow fe is good reason to believe also of cholera, supported as it is by the a action of certain poisons on the system, I will now endeavour to p sistency and reasonableness of the turpentine mode of cure. During it was first prescribed by Dr. King, in five very bad cases of this dis view solely, I believe, of restraining passive hemorrhage, when its pe influence was so strikingly observed. This happened on the 27th of a month after the fever had broken out; a revulsive plan of treatm general and local bleeding, to a large extent, having, up to this peri tised with very unsatisfactory results. After these experiments on alluded to, all of whom remarkably recovered (and two were repor had black vomit), the turpentine was afterwards given in every case stage of the disease, with what success documents then sent into off When I joined the hospital on the 19th of September, the epidemic r have been at its height, and there were then 103 cases of fever un The general mode pursued was a moderate bleeding at the commence to 20 ounces), followed by cupping or leeching, if it seemed necessar

If the patient had received no medicine prior to admission, the p cleared out by a purgative dose of calomel or blue pill, along with s som salts, and the turpentine then given in doses of twenty minims i phorated water three times a day. In consequence of strangury, it w administered in combination with sweet spirits of nitre; but this troul tom was happily of but rare occurrence, and then generally conse application of blisters. Small doses of tincture of opium, and also c occasionally combined with it, in cases attended with frequent bloody vitiated dejections, or in an opposite state of the bowels. The auxil comprised sinapisms and blisters to the epigastrium, emollient enema the stage of debility, wine negus, beef tea, &c., and cinchona in principal remedy being, therefore, the turpentine, since in the generali nothing else was given, I consider it, without any prejudice whateve in bilious remittent fever, not only perfectly consistent with, but pa cated by, the symptoms during life, and also the appearances after following reasons:—First, the hemorrhagic character of the disea doubtless, on some change either in the chemical or vital properties c ing fluid; secondly, from the speedy embarrassment of the different c tions, particularly that of the kidneys, a diminished or suppressed exe having been particularly observed here as the most unfavourable proved by the frequently contracted and empty condition of the bl

cases. As regards the first proposition, since this medicine is univ
ledged as producing certain styptic and other salutary effects, melæ
passive hemorrhage, is it not reasonable to infer that it will be equ
fevers, not recognising inflammation as their proximate cause and
somewhat similar pathological condition? In regard to the second
well known physiological influence on the renal and cutaneous vesse
be, as a diuretic and sudorific, the very remedy which nature poi
means she herself adopts in the spontaneous cure of malignant
these long and well known properties, and also its acknowledge
nervous system, I believe that turpentine possesses antiseptic or anti
ties, as I have in several instances observed in scurvy, and particul
ulcers of the leg, indicated by their florid, healthy appearance, after
this medicine. That it is not in the doses above mentioned a stimu
contrary, an indirect sedative, and, therefore, not counter-indicated i
of yellow fever, our experience here most satisfactorily proved in hu
as it has also since done in the treatment of dysentery. Unprejudic
am, and being anxious to bring this really valuable remedy more i
honest appeal to plain ascertained facts, I beg respectfully to state, i
nest and unqualified manner, that instead of exciting the circulati
and allayed the urgency of the primary pyrexia by quickly (and,
almost immediately) restoring the pent-up secretions. The mod
which was generally practised at the commencement, and frequent
tially necessary to divert local determinations, no doubt materially a
action on the skin and kidneys, and on this account must be consi
important step in this mode of treatment.

Turpentine is, therefore, a mere simple, innocuous remedy, wh
sedative, styptic, and antiseptic properties, possesses also the pecul
action on the secretions and excretions, generally, of re-establishi
open the two great natural drains of the system—viz., those by th
neys, the functions of which, we all know, are amongst the first to
impeded on an attack of fever. That it claims attention from its ha
tage over specific medicines in this disease, such as quinine, calomel
biberine (mercury being now considered not a specific, of which we
proofs), is sufficiently obvious, from the nature of its action being r
and from its use being equally beneficial in the last as in the first st
ease; I mean, when black vomit, bloody dejections, and low deliriu
and as a testimony to its good effects, we had several recoveries fr
attributable entirely to its influence.

Viewing, therefore, the pathology of yellow fever, as being prim
with a morbid alteration of the blood, and admitting the analogy b
nomena and the action of a septic poison on the system, borne out,
is, by the rapidity of the morbid action, the salutary efforts of nature
convalescence—what better remedy, I beg respectfully to ask, do y
this, which, like ammunition in a besieged citadel, supplies the m
till the poison, like the enemy, is worn out and overcome?

In conclusion, I have to observe that during the last winter I ha
of trying this remedy in a very severe case of *typhus* fever, as did a
in eight other cases, with excellent effect, given in the following for
turpentine, spirit of nitric ether, of each three drachms; compo
lavender, two drachms; camphor mixture, four drachms. Of thi
shaken up), a tea-spoonful was given in a wine-glassful of water e
I was led to prescribe the turpentine in this form to save the patient
was very poor, the expense of a larger mixture, and combined it
ether, to guard against strangury, which I was afraid would be easi
climate. The other ingredients appear to answer tolerably well
turpentine taste and smell; but the inodorated is much preferable
turpentine. In all these cases its beneficial effects were equally we
the continued and remitting fevers of Bermuda; and I have no do
of your readers feel disposed to try this mode of treatment in the t
this country, with an unprejudiced mind and observant eye, the resu
truth of these remarks.—*Lancet, Aug.* 27, 1853, *p.* 183.

the over-excited nervous system "handsomely," as sailors say, and besides restores the appetite.

I shall conclude this paper by saying that I have lately used quinine as a prophylactic with much success. Indeed I now make a point of giving it to all who have recently arrived from Europe, especially midshipmen who have never been in the tropics before. I use it in the doses recommended by my friend, Dr. Cambell, of Kingston, Jamaica—three grains twice a day, taken as bitters.—*Lancet, July* 23, 1853, *p.* 75.

5.—PRACTICAL OBSERVATIONS ON YELLOW FEVER AND ITS TREATMENT WITH SPIRITS OF TURPENTINE.

By James Laird, Esq., Edinburgh.

[To Dr. Gilbert King is due the credit of having first used this remedy in bilious remittent fever. Mr. Laird is of opinion that this disease is not of an inflammatory diathesis, but a blood poison from external influences—the organic lesions being secondary. Hemorrhages from the nose, mouth, and bowels, of a passive character, proved that the blood was in a dissolved and deteriorated condition.]

It appears natural to conclude that the blood, after its primary impregnation, or rather at the commencement of the attack, becomes afterwards further contaminated by the non-elimination of the different excretions, as is known to take place in certain forms of jaundice, in milk fever, and disease of the kidneys.

With this view, therefore, in regard to the pathology of yellow fever, and there is good reason to believe also of cholera, supported as it is by the analogy of the action of certain poisons on the system, I will now endeavour to prove the consistency and reasonableness of the turpentine mode of cure. During the epidemic, it was first prescribed by Dr. King, in five very bad cases of this disease, with the view solely, I believe, of restraining passive hemorrhage, when its peculiar salutary influence was so strikingly observed. This happened on the 27th of August, about a month after the fever had broken out; a revulsive plan of treatment, including general and local bleeding, to a large extent, having, up to this period, been practised with very unsatisfactory results. After these experiments on the five cases alluded to, all of whom remarkably recovered (and two were reported as having had black vomit), the turpentine was afterwards given in every case and in every stage of the disease, with what success documents then sent into office will show. When I joined the hospital on the 19th of September, the epidemic may be said to have been at its height, and there were then 103 cases of fever under treatment. The general mode pursued was a moderate bleeding at the commencement (from 12 to 20 ounces), followed by cupping or leeching, if it seemed necessary.

If the patient had received no medicine prior to admission, the primæ viæ were cleared out by a purgative dose of calomel or blue pill, along with solution of Epsom salts, and the turpentine then given in doses of twenty minims in a little camphorated water three times a day. In consequence of strangury, it was occasionally administered in combination with sweet spirits of nitre; but this troublesome symptom was happily of but rare occurrence, and then generally consequent on the application of blisters. Small doses of tincture of opium, and also castor oil, were occasionally combined with it, in cases attended with frequent bloody and otherwise vitiated dejections, or in an opposite state of the bowels. The auxiliary treatment comprised sinapisms and blisters to the epigastrium, emollient enemata, and during the stage of debility, wine negus, beef tea, &c., and cinchona injections. The principal remedy being, therefore, the turpentine, since in the generality of the cases nothing else was given, I consider it, without any prejudice whatever, as a remedy in bilious remittent fever, not only perfectly consistent with, but particularly indicated by, the symptoms during life, and also the appearances after death, for the following reasons:—First, the hemorrhagic character of the disease, depending, doubtless, on some change either in the chemical or vital properties of the circulating fluid; secondly, from the speedy embarrassment of the different excretory functions, particularly that of the kidneys, a diminished or suppressed exeretion of urine *having been particularly* observed here as the most unfavourable symptom, and *proved by the frequently contracted* and empty condition of the bladder in fatal

cases. As regards the first proposition, since this medicine is universally acknowledged as producing certain styptic and other salutary effects, melæna and ordinary passive hemorrhage, is it not reasonable to infer that it will be equally effectual in fevers, not recognising inflammation as their proximate cause and attended with a somewhat similar pathological condition? In regard to the second proposition, its well known physiological influence on the renal and cutaneous vessels proves it to be, as a diuretic and sudorific, the very remedy which nature points out, in the means she herself adopts in the spontaneous cure of malignant fever. Besides these long and well known properties, and also its acknowledged action on the nervous system, I believe that turpentine possesses antiseptic or antiscorbutic qualities, as I have in several instances observed in scurvy, and particularly in scorbutic ulcers of the leg, indicated by their florid, healthy appearance, after a few doses of this medicine. That it is not in the doses above mentioned a stimulant, but, on the contrary, an indirect sedative, and, therefore, not counter-indicated in the first stage of yellow fever, our experience here most satisfactorily proved in hundreds of cases, as it has also since done in the treatment of dysentery. Unprejudiced as I hope I am, and being anxious to bring this really valuable remedy more into notice by an honest appeal to plain ascertained facts, I beg respectfully to state, in the most earnest and unqualified manner, that instead of exciting the circulation, it quieted it, and allayed the urgency of the primary pyrexia by quickly (and, in some cases, almost immediately) restoring the pent-up secretions. The moderate bleeding, which was generally practised at the commencement, and frequently found essentially necessary to divert local determinations, no doubt materially assisted it in its action on the skin and kidneys, and on this account must be considered as a very important step in this mode of treatment.

Turpentine is, therefore, a mere simple, innocuous remedy, which, besides its sedative, styptic, and antiseptic properties, possesses also the peculiar power, in its action on the secretions and excretions, generally, of re-establishing and keeping open the two great natural drains of the system—viz., those by the skin and kidneys, the functions of which, we all know, are amongst the first to be impaired or impeded on an attack of fever. That it claims attention from its having the advantage over specific medicines in this disease, such as quinine, calomel and quinine, and biberine (mercury being now considered not a specific, of which we have numerous proofs), is sufficiently obvious, from the nature of its action being readily explained, and from its use being equally beneficial in the last as in the first stage of the disease; I mean, when black vomit, bloody dejections, and low delirium have set in; and as a testimony to its good effects, we had several recoveries from black vomit, attributable entirely to its influence.

Viewing, therefore, the pathology of yellow fever, as being primarily connected with a morbid alteration of the blood, and admitting the analogy between its phenomena and the action of a septic poison on the system, borne out, as their identity is, by the rapidity of the morbid action, the salutary efforts of nature, and the speedy convalescence—what better remedy, I beg respectfully to ask, do you require than this, which, like ammunition in a besieged citadel, supplies the means of defence, till the poison, like the enemy, is worn out and overcome?

In conclusion, I have to observe that during the last winter I had an opportunity of trying this remedy in a very severe case of *typhus* fever, as did also a friend here in eight other cases, with excellent effect, given in the following formula:—Spirit of turpentine, spirit of nitric ether, of each three drachms; compound tincture of lavender, two drachms; camphor mixture, four drachms. Of this mixture (well shaken up), a tea-spoonful was given in a wine-glassful of water every four hours. I was led to prescribe the turpentine in this form to save the patient I attended, who was very poor, the expense of a larger mixture, and combined it with the nitric ether, to guard against strangury, which I was afraid would be easily excited in this climate. The other ingredients appear to answer tolerably well in disguising the turpentine taste and smell; but the inodorated is much preferable to the common turpentine. In all these cases its beneficial effects were equally well marked as in the continued and remitting fevers of Bermuda; and I have no doubt, should any of your readers feel disposed to try this mode of treatment in the typhoid fevers of this country, with an unprejudiced mind and observant eye, the result will prove the truth of these remarks.—*Lancet, Aug.* 27, 1853, *p.* 183.

6.—ON PYOGENIC FEVER.

By Dr. William Jenner.

[This disease might be termed acute purulent diathesis; but the name Dr. Jenner has given it is a more simple one.]

Immediately after the termination of the acute specific diseases, it is by no means uncommon for one or two small abscesses to form in the subcutaneous cellular tissue. A frequent seat of these collections of purulent-looking fluid is the subcutaneous cellular tissue of the scalp. More or less febrile disturbance may precede or accompany their development. Although more common, perhaps, in the situation referred to than elsewhere, they are by no means limited to it. Sometimes, instead of two or three, the number of these collections of purulent-looking fluid is considerable. If small, their contents may be absorbed; but this rarely happens if their size exceeds that of a walnut.

The signs of inflammation that precede the formation of the pus are usually of the most trivial kind, the patient's knowledge of the existence of the local ailment being first derived from the presence of the swelling; the physician at the same time observes fluctuation. Sometimes, however, the signs of inflammation are more manifest, and, while pus is formed more or less rapidly at some spots, at others the inflammatory signs disappear, and neither before nor after their disappearance is any evidence of the presence of pus to be detected. The local lesion is limited to the first stage.

These disseminated abscesses in the subcutaneous tissue after or during the progress of the acute specific diseases, are allowed pretty generally to have their origin in a diseased condition of the blood; only, by some they are held to be critical, the evacuants of peccant matter: while by others they are regarded merely as local inflammations, excited by a diseased condition of the blood,—a diseased condition which gives to the local inflammation it excites a tendency to terminate in the exudation of a blastema susceptible only of evolution into an albuminous fluid and cells of low organisation. The exudation of a blastema possessing the same properties in so many places at the same time, is held to indicate the existence of a definitely diseased condition of the fluid from which that blastema is formed, just as the deposit of many masses of cancer blastema in the same body at the same time, is held to indicate the existence of a definite disease of the blood in the person who is the seat of them. The idea that these subcutaneous collections of purulent-looking fluid of small size, and the formation of which is attended with little constitutional disturbance, are due to any foreign solid matter, be it pus globules or any other, circulating in the blood, has never, so far as I know, been advanced: it would be too untenable to be entertained for an instant. But, instead of being attended by little constitutional disturbance, as in the cases to which I have just referred, we now and then find that great constitutional derangement precedes and accompanies the establishment of the suppurative action,—that, instead of being situated in the cellular tissue immediately under the skin, the collections of purulent-looking fluid are formed in cellular tissue more deeply seated. Again, in other cases, we find that they are not limited to the cellular tissue, but that the pus blastema is exuded into the joints; and yet further, that it is in rare cases disseminated in masses through the viscera of the chest and abdomen. Now, the transition from the first to the last described state is by most insensible gradations; the circumstances under which all occur are the same; and, if it be granted that the first arises from a definitely diseased state of the blood or system generally, I see not on what ground it can be argued, that the others, which differ only in the more wide diffusion of the local affections, may not also depend on the same diseased state of the blood. This disease seems very closely allied to that condition of the blood in which purulent discharges issue at the same time from several of the mucous membranes after some of the acute specific fevers, and to that chronic state in which every scratch or abrasion "festers," as the vulgar say. The existence of this condition of the blood or system generally, as a substantive disease, appears to have been in modern times first recognised by Tessier, in 1838. He, however, associated with it the cases in which *disseminated* abscesses are excited by the circulation of foreign matter in the blood. *Tessier described the state referred* to as a new pathological genus, under the name

of the "purulent diathesis;" and he defined it to be a new modification of the organism characterised by a tendency to suppuration in the solids and coagulable fluids. Amid much pathologically erroneous, the doctrine of Tessier appears to contain an important truth, viz., that in a certain number of cases of disseminated abscesses the febrile disturbance is established before any local disease is set up, and, consequently, before any pus is formed, and by inference, that the abscesses are, in such cases, merely the effects of a special alteration of the element from which that blastema is exuded out of which they are developed.

Although the morbid condition of the blood, which is thus manifested by its effects, is common as a consequence of the acute specific diseases, it sometimes arises without having been preceded by any other disease, *i. e.*, as a primary substantive affection.

Of this, the following case appears to me to offer some evidence:—

A man, aged 31 years, of temperate habits, and usually enjoying health, after feeling generally poorly for two or three days, became decidedly ill July 23rd. The symptoms were—heat of skin, headache, a furred tongue, and disinclination for all exertion. On the evening of the 24th, a red patch appeared on the outer aspect of either leg. On the 25th, there was induration of the same patches. On the 26th, there was redness of the left shoulder, and a red, indurated, elevated patch on the outer aspect of the left upper arm.

The mind was now confused.

He came under my care in University College Hospital on the 28th. At that time his mind was confused, and occasionally wandered. His movements were rather tremulous, and there were now and then some twitchings of the muscles of the face. He was rather restless, and slept but little. There was no headache. The complexion was thick, and rather sallow. The tongue moist and red at the tip and edges, and on its dorsum was a little dirty fur. The abdomen was rather full and resonant, but not tender. He passed, during twenty-four hours, one stool. The pulse was 96, moderately full, but rather weak. The heart's sounds were natural. Red patches—the redness gradually shading into the hue of the surrounding skin, some indurated, others not—were seated on the outer aspect of the right thigh, the calf of the left leg, the anterior aspect of the left tibia, the inner and anterior aspect of the right upper arm, and the centre of the right deltoid.

The whole surface was carefully inspected. There was not the slightest trace of suppuration at any spot; no redness or tenderness in the course of any of the veins in the vicinity of the red spots, nor, so far as could be ascertained, elsewhere.

There was no cough. The respirations were 24 in the minute.

Time will not permit me to detail the daily notes of the case. Suffice it to say, that many other red patches appeared at various parts of upper and lower extremities,—that pus was evacuated from two seated on the anterior aspect of one tibia,—that fluid was effused into the knee-joints, and probably into one ankle-joint,—and that at no time was there reason to believe that any internal organ was the seat of purulent deposits. The patient recovered completely at the expiration of about a month from the first symptoms of illness.

The following is the abstract of a case of this disease, which occurred subsequently to measles:—

A boy, aged four and a half years, was admitted, under my care, into the fever ward of the hospital for sick children, in August last.

About a week after the disappearance of the rash of measles, the child never having been free from symptoms of illness, the wrists were observed to be swollen; then an abscess formed in the subcutaneous tissue of the back. Subsequently, collections of pus formed on the dorsum of the right hand, over the right wrist, in and over the left elbow-joint, under the right glutæus maximus, in the cellular tissue about the right psoas, and in the left hip-joint; and there were purulent discharges from the ears. He died about five weeks after the swelling of the wrists commenced.

No purulent fluid was found in any internal organ. The examination of the body was made by my friend, Dr. Ballard.

In these cases, as in *the majority of those belonging to the same order, the subcutaneous tissue and joints were exclusively the seats of the collections of purulent fluid* In some such cases, however, abscesses are found in the lungs; but then they are generally small in size, few in number, and in a much less advanced state than those

in the parts I have just mentioned; while it will be remembered, that when foreign solid matters, as pus corpuscles, &c., are thrown by the experimentalists into the venous current, it is the lungs which are alone affected in a large majority of cases; and when other parts suffer, the lungs are still the most extensively diseased.

Sedillot supports his doctrine, that the circulation of pus corpuscles with the blood is the sole cause of disseminated abscesses, by four orders of proof:—

1st. By the invariable pre-existence of a centre of suppurative action.

In the class of cases to which I am referring there is no pre-existing abscess or ulcer.

2nd. By the relation observed between the formation of pus in the veins, the passage of that liquid into the blood, and the development of pyæmia.

Of this relation there is no evidence in the class of cases of which I am speaking.

3rd. By the presence of pus in the blood, verified by observation.

There is no pus to be detected in the blood in those cases which I would class together under the name of pyogenic fever. Of this, repeated examinations enable me to speak with confidence.

4th. By the results obtained by the injection of pus into the veins of animals.

Now, as the symptoms and the *situation* of the disseminated abscesses are different in cases of pyogenic fever, and artificially induced pyæmia, it is improbable that the disseminated abscesses in the two have their origin in the same cause. And as the disseminated abscesses, artificially produced by Sedillot, were undoubtedly the effect of the circulation of pus with the blood, it is the more unlikely that the disseminated abscesses, in the class of cases I am describing, are the effects of the circulation of pus with the blood.

Thus, then, tested by Sedillot's four orders of proof, there are cases of multiple, or disseminated abscesses, which are not, or which cannot be proved to be directly or indirectly excited by the entrance of pus into the blood.

The acute specific disease, with which especially the acute purulent diathesis, or pyogenic fever, may be confounded, is, especially, typhus fever. From this it is distinguished by the activity of the febrile symptoms at the outset, the early delirium, the absence of eruption, and the rapid formation of the numerous centres of suppurative action.

Pathologically, the affinity of this disease seems to be with erysipelas.

I ought not to quit this subject without stating, that, although I have spoken only of the two varieties of the acute purulent diathesis, which especially fall under the cognisance of the physician, viz., that which follows the acute specific diseases, and that which arises as a primary affection, yet Tessier considers, that phlebitis, phlegmonous erysipelas, and internal abscesses following operations, are consequences of this same general condition. The questions here raised are foreign to the object of these discourses.—*Med. Times and Gazette, May* 7, 1853, *p.* 463.

7.—CHRONIC RHEUMATISM: Cardiac Complication; Albuminuria; Anasarca and Ascites; Good Effects of Elaterium.

Under the care of Dr. Todd.

[It is well known that anasarca and ascites are prominent symptoms to which heart, lung, or kidney disease may give rise, and to remove which our best energies are usually directed. In the case of the kidneys, we act usually on the skin by the vapour bath, and on the intestinal mucous membrane by elaterium. In the case about to be related, the present attack differed from all previous ones, inasmuch that the swelling of the feet was not removed after a few days, but gradually increased, so that the legs, thighs, and even abdomen, became distended. Her state on admission is described as follows:]

The legs are much swollen and œdematous, and there is distinct fluctuation of the abdomen, which measures thirty-four inches in circumference. The superficial jugular veins are much distended; they do not empty themselves when compressed below the point of compression; and there is an indistinct systolic bellows-sound to be heard. She passes in forty-eight hours about three pints of urine, which is *loaded with albumen, and contains* a number of epithelial casts and crystals of the

triple phosphate of ammonia and magnesia. The patient has a constant cough which troubles her very much, and prevents her from getting any sleep at night. She expectorates a large quantity of mucus; and over the whole of the front of the chest loud rhoncus is to be heard. Dr. Todd ordered decoction of scaporium, one ounce and a half; carbonate of ammonia, five grains; benzoic acid, five grains, to be taken every sixth hour; and ten grains of Dover's powder every night.

She continued this plan of treatment for sixteen days, without any diminution of the dropsy, but rather an increase of it, as she was passing less water than when she came in—viz., about one pint and a half in the day.

On the 1st of June, seventeen days after admission, she complained of convulsive movements of the limbs; and during the same night she was suddenly seized with epileptic fits, the whole body being convulsed; she foamed at the mouth, and bit her tongue. She remained unconscious after the fits till just before another was coming on, when she used to rise up in bed. She complained of no pain; the pupils were dilated during the fit, but became contracted in the intervals. She had had eight of these fits by three o'clock the following day. Dr. Todd then saw the patient, and ordered her to take a quarter of a grain of extract of elaterium, made into a pill, every three hours. At six o'clock she began to be purged, and in the course of the twenty-four hours her bowels had been opened as many as twenty times, and she passed a considerable quantity of water with each motion. There had been no symptoms of another fit.

Twenty-first day.—She was ordered to take the pills only every six hours, as they purged her a great deal; and she continued them in this way for ten days. She became very weak, but that was all she complained of. She could lie down in bed without her cough troubling her. The legs were not at all œdematous, and there was only a small quantity of fluid in the abdomen. The urine contained a much less quantity of albumen than on admission, and she was at this period passing about two quarts in the day. The woman was now ordered to take forty grains of compound jalap powder every morning.

Fifteen days after this, notwithstanding the bowels were frequently opened by the powder, the quantity of urine diminished considerably, and the legs and abdomen began to swell also. The patient was therefore ordered to take a drachm of bitartrate of potash, and one drachm of spirit of nitrous ether, every four hours.

The diuretics, however, did not have the desired effect; she passed only about a pint and a half of urine in the day; the dropsy had increased more than ever, and after continuing this treatment for a week, she complained of convulsive movements of the limbs. Dr. Todd now resumed the hydragogue medicine, and she was ordered to take a quarter of a grain of extract of elaterium every third hour. This was continued for two days; she had no more symptoms of a fit, but was violently purged. Dr. Todd therefore ordered her to take the pills only twice a day.

This treatment was persevered in for a fortnight, at the end of which time the patient was much better; she slept comfortably at night, had lost her cough, and the dropsy had again diminished. The pills were now taken once a day, the bowels being thereby opened three or four times per diem.

At the end of another week this patient was discharged at her own request. She was able to get up and go about the wards; her appetite was good, and she slept well; the urine contained a slight amount of albumen, but no casts, and she passed about two quarts in the day. The dropsy had altogether disappeared, but she was very weak, and it was judged that a change of air would do her good.

It is remarkable how the epileptic fits (probably depending on the circulation of poisoned blood in the brain) were stayed by the numerous aqueous evacuations procured by the elaterium; and it might almost be supposed that some of the *materies morbi* was carried off by the stools. Some practitioners will, perhaps, think the doses given in this case large and pretty frequently repeated; but it is evident that any lesser doses would have failed to afford the relief which was here obtained, and we consider the case valuable as showing how much of the hydragogue can be given, and how far it can safely be pushed.—*Lancet, Aug.* 20, 1853, *p.* 166.

8.—*On Cases of Diseases of the Heart in relation to Rheumatism and Albuminuria.* By Dr. Barclay, Medical Registrar of St. George's Hospital, &c.—[After a

very careful and extended inquiry into this most interesting and important subject, Dr. Barclay thus sums up the results he has obtained:]

About a third of the cases of valvular lesion are associated with a rheumatic history, and among them there is a great preponderance of cases of simultaneous lesion of both sets of valves, next of the mitral alone, and scarcely any in which the aortic valves alone are diseased; it seems in most of these cases probable that during the first attack of rheumatism the mitral valves were alone inflamed, and at some future period also the aortic secondarily. In more than half the cases of valvular lesion the kidney was not quite healthy.

Disease of the aortic valves is more frequently associated with hypertrophy, and of the mitral with dilatation; adhesions of the pericardium mostly with dilatation. Atheroma of the aorta and disease of the kidney, each accompany a large majority of the cases of simple hypertrophy. In nearly half of all cases of disease of kidney indiscriminately, there is alteration in the muscular structure of the heart.

In regard to acute rheumatism it is shown that in the greater number of instances it occurs before 25 years of age, and that the largest proportion of cardiac inflammations are found between 10 and 15 years of age. Females are in a slight degree more liable to it than males, and are also more subject to cardiac complications. On the other hand, there are many more males than females admitted with confirmed disease of the heart, but the difference is less when the disease is of rheumatic origin. At the earlier ages almost all cases of confirmed disease of the heart owe their origin to acute rheumatism; at more advanced ages it almost ceases to be found among the causes.—*Med.-Chirurgical Transactions*, 1852, *p.* 25.

9.—ON THE REMEDIAL EFFECTS OF LEMON JUICE IN RHEUMATISM, AND ON SOURCES OF FALLACY CONNECTED WITH ITS USE.

By Dr. G. Owen Rees, F.R.S., &c.

[Chronic forms of rheumatism are not so readily relieved by this remedy as the acute. Even among the acute cases there would seem to be a great difference, some cases yielding readily, others continuing for several weeks, in spite of this or of any remedies. We cannot expect that in every case the reason why this fact is so will be explained, but the following observations of Dr. Rees will tend to clear away much of the difficulty in most of them:]

Among the cases admitted from time to time into Guy's Hospital, I have had opportunities of satisfying myself that acute articular rheumatism is frequently complicated by the presence of three conditions, which tend to keep up the disease, and so to interfere with the favourable action of lemon-juice. These are,—1stly, Syphilitic rheumatism. 2ndly, Gonorrhœal rheumatism. 3rdly, A pseudo-rheumatic affection occurring in connexion with purulent discharges not necessarily gonorrhœal. Over these pathological conditions lemon-juice exerts no favourable influence.

Not only may the above-mentioned complications interfere with the success of the remedy, but I have seen it exhibited in the last described, where the whole of the rheumatism present might in all probability be correctly attributed to the existence of a purulent discharge from the vagina, and where no remedy whatever produced a favourable influence, till recourse was had to treatment directed to the cure of the discharge.

The true nature of cases such as these is very apt to be overlooked; and I shall therefore here give an instance showing the necessity of attending to the point in question:—

Ann B—, aged thirty, was admitted into Guy's Hospital, Oct. 13, 1852, suffering from what appeared to be chronic rheumatic gout. When young she enjoyed good health, and commenced to menstruate when thirteen years old, and has always been regular. Has been married four years, and had a child about two years after marriage. Soon after her confinement, she had an attack of rheumatism affecting the joints. The pains in the head, before complained of, and which had continued up to this time, now ceased. This attack rendered her incapable of performing her household duties, and it continued to the time of her admission.

State on admission: Joints of extremities much swollen, and very painful

on pressure. There is a copious yellow discharge from the vagina, but she denies ever having had gonorrhœa. Respiratory and heart sounds normal. Tongue clean, appetite good, bowels open. Pulse 84. To take iodide of potassium, three grains, in mint water, three times a day. Cod-liver oil night and morning.

18th. Complains of hemorrhoids; much the same. Six leeches to the anus. Linseed poultice to the part affected.

25th. No improvement in the pains in the joints. Guaiacum mixture, one ounce three times a day. Disulphate of quinine, two grains; acetic extract of colchicum, one grain; powdered ipecacuanha, two grains: mix and make into pills; to be taken night and morning.

29th. Pains not at all relieved, but the medicine purges her. To discontinue the present medicines, and to take chalk mixture, one ounce, after each liquid stool, till diarrhœa cease.

Nov. 1st. Pains no better. Diarrhœa soon left her. Lemon-juice, three ounces, three times a day.

8th. No better. The vaginal discharge still continues. Compound tincture of guaiacum, half a drachm; compound tincture of camphor, half a drachm; mucilage mixture, one ounce, three times a day. Dover's powder, eight grains every night.

11th. Is no better. Soda poultice to the part affected. Continue medicine.

15th. Is much the same. Benzoic acid, five grains; compound tincture of camphor, half a drachm; mucilage mixture, one ounce, three times a day.

22nd. No improvement. Compound iodine julep, one ounce, three times a day. Dover's powder, five grains, every night. Turpentine liniment.

Dec. 4th. Is no better. Continue the medicines. From this date baths and iodine friction were tried up to

Jan. 3, 1853. Shoulders and arms are now rather less painful. Pulse 76, full and soft. Tongue clean. Bowels relieved once daily. Sleeps better at night. Conium mixture thee times a day. Omit baths.

13th. Pains of limbs still continue. The discharge from the vagina is profuse. Powder of cubebs, one drachm, three times a day.

17th. Is decidedly improved. The swelling and tenderness of joints less. The discharge from the vagina less. Bowels regular.

From the last date given, this case rapidly got well; but, as will be seen, neither lemon-juice nor any other remedy afforded relief till the profuse purulent discharge was checked. The whole case was characterised by symptoms approaching to the subacute form; and it therefore would not have been selected from what I already knew as one likely to be much benefited by lemon-juice. The observations I have now made on the sequel of the case, will, however, I trust, be regarded as a step in advance, and serve to establish it as a more definite type of a class of cases which we shall in future at once exclude as unfit for treatment, either by lemon-juice, or any other of the ordinary remedies employed against rheumatism, but easily relieved when their true pathology is ascertained.

From what I have advanced, it will be observed, that I consider lemon-juice the antidote to the true rheumatic diathesis; and that I expect to account for failures in treatment, by detecting either complications, or complete pathological differences.

I have already given a case illustrative of the latter character, and I wish now in addition to direct attention to two other forms of disease belonging to the same class, which I have seen mistaken for rheumatism, and treated by lemon-juice, without the least benefit being derived. The first of these is the pseudo-rheumatic affection sometimes observed during the course of Bright's disease. Though the pathology of this affection is as yet but imperfectly understood, still the symptoms and progress differ sufficiently from those of true rheumatism to enable us to draw a distinction; and I believe we may now fairly add another distinctive mark in the fact that the disease in question is not benefited as true rheumatism is by the exhibition of lemon-juice. I have seen the remedy here fall into temporary disrepute till the mistake was detected. The other form of disease I would allude to, and which is perhaps characterised by as severe torture as any of those yet treated of, is observed in connexion with spinal deformity. Here the pains are most extreme, and vary in intensity according to the health of the individual. Of course lemon-juice cannot here be expected to benefit the patient, though its credit as a remedy has

often suffered owing to its administration in such pseudo-rheumatic cases.—*Lancet, June* 11, 1853, *p.* 534.

10.—ON FATTY DEGENERATION.

[Dr. Hanfield Jones, after an elaborate review of the subject of fatty degeneration, thus concludes:]

We think that we have evidence of the following varieties of fatty change:

1. Fatty conversion of mere masses of dead matter, organized or non-organized, without or within the body.

2. Fatty degeneration of organized and living tissues, reducing them gradually to a lower grade of organization and vitality.

3. Fatty replacement, by a growth of fat-cells taking place on an organ which is either in a state of simple or fatty atrophy.

4. Fatty replacement of granular matter of epithelium without any degeneration.

We doubt not that these several conditions are in some measure allied, especially 2 and 3; but it seems to us, that to attempt to bring them all together under one common head, when there are such manifest differences between them, would be an unwarranted generalization.

The causes of fatty degeneration have already been incidentally referred to. They are recognised by all observers as those which lower the vital energies. Defect of activity in the various excreting organs of course causes an accumulation of oily matter in the blood, which finds vent by being deposited in all the interstices of the organs, and taking the form of adipose tissue. The same will occur if, by means of the food, an excess of oily matter is introduced into the circulation. So long, however, as the organic life of the tissues persists, they will nourish themselves healthily out of this oil-laden blood; but when that begins to decay, then oily matter settles down in situations from whence the organizing force before excluded it. The effects of spirit drinking illustrate extremely well the two principal conditions of the change. Impairment of excretory action, and pouring in of an hydro-carburet into the blood, cause it to be loaded with oil; while the debilitating action of the alcohol on the nervous system, and through it probably on all other parts, lowers their vital energies, and at length so enfeebles their organic life, that they can no longer maintain their healthy construction.

To attempt to enter upon the subject of the treatment of fatty degeneration would be out of place here; but we cannot close without expressing the feeling which is strongly fastened on our mind, that a large portion, probably the majority, of the diseases of the present day, are of the nature of degenerations, commencing unperceived, advancing gradually, and often scarcely attracting attention, till irreparable mischief is done. We do think it behoves medical men to impress strongly on the minds of parents and of friends, the deep need there is for watching carefully the first symptoms of failing health; and of not deferring to seek aid until serious disease has sounded its alarm, and disorganizing processes have commenced that can never be thoroughly repaired.—*Brit. and For. Medico-Chirurg. Review, July*, 1853, *p.* 45.

11.—*On the Relation of Drunkenness to Fatty Degeneration.*—The description which Rokitansky gives of the condition of the system in the so-called drunkard's dyscrasia, may, we think, be quoted with advantage, as it illustrates very well the effects resulting from an unnaturally fatty state of the blood, and from a lowered state of the vital forces in the nervous centres, and throughout the system generally. He recognises an acute and chronic form. The latter appears as plethora, attended with a marked dusky colour and viscidity of the blood, and with a proportionate increase of its fatty contents. The condition of the solids results from this state of the blood, and is explained by it. The formation of pigment in the skin, the excessive, and at the same time qualitatively abnormal, formation of fat, and the *mucous* profluvia, are prominent symptoms. The bodies of old brandy-drinkers *present very remarkable phenomena*: the skin appears tinged of a dirty brownish

hue (though parts naturally coloured—as the scrotum—may become pale); it has also a soft, velvety, fatty feel, like a negro's, and its epidermis is thin. In the subcutaneous tissue chiefly, and next in frequency, in the mesentery and omentum, fat is deposited in a quantity, either absolutely excessive, or at any rate disproportionate to the condition of the muscular tissue. The quality of this fat is similar to that of mutton suet. The muscular tissue is diminished in bulk, and is also pale. The formation of fat invades the muscles as the so-called fatty transformation; the liver, however, is especially thus affected. Even in the bones the formation of fat takes place in an excessive manner, at the cost of the osseous structure. All the mucous membranes, especially the bronchial and the intestinal, suffer from chronic tumefaction and blennorrhœa. The gastric mucous membrane, especially, is the seat of a chronic catarrh. A similar condition of hypertrophy is exhibited in the habitually congested membranes of the brain, in the form of turbidity, thickening, or chronic œdema. The brain is shrunken as from senile atrophy, with or without enlargement of its cavities, and serous effusions in them. The blood appears dark, viscid, without fibrinous coagulum; has a sticky, greasy feel; often contains fat, mixed with it in the form of oil-drops, in great abundance; or, in rarer cases, presents a whitish, milky, chyle-like turbidity. In the acute form there is a marked tendency in the whole mass of blood to remain fluid, to lose its natural colour, and to allow the transudation of dirty red serum; while oil separates on its surface in the form of largish drops. The dead bodies exhale a remarkably sweetish smell, and quickly pass into decomposition. We have carefully perused the account which Dr. Huss gives, in his work on 'Alcoholismus Chronicus,' of the morbid changes induced by spirit drinking. His description corresponds very closely with Rokitansky's, but is of course more detailed. He notices the frequent occurrence of granular kidney, and how this degenerative change is induced in such persons by intermittent fevers and rheumatic attacks more frequently than it would be in the healthy. The heart in drunkards becomes hypertrophied, afterwards overlaid with a fatty growth, while the muscular tissue wastes. The aorta is sometimes atheromatous; and the cerebral vessels, the smaller especially, are often dilated, and the coats of the larger brittle. The spinal cord is commonly healthy; sometimes it is wasted, like the brain. The voluntary muscles are generally flabby, their tissue thin, withered, pale, often seeming to be penetrated by fat; they waste, in extreme cases, to one-fourth or one-fifth of their natural size. The quantity of fat in the blood is shown by analysis to range from 117.8 (Le Canu) to 42.0 (Mareska) per 1000 parts; the highest estimate of the quantity in health not exceeding 8.65. The serum is often milky, and in a more marked manner in those cases in which the opacity is caused by oil, than in others where it depends on the presence of proteine matter. The following circumstances are especially mentioned as accounting for the unnatural condition of the blood:—(*a*) The absorbed alcohol interferes with the taking in of oxygen into the blood and the giving out of carbonic acid, so that the blood remains in an unnaturally venous state. This is given as the result of Schultz and Klencke's experiments; but Vierordt and Prout have also shown that spirituous drinks diminish the quantity of carbonic acid expired, and this to a greater extent when taken upon an empty stomach, when they would of course be most rapidly absorbed. (*b*) The alcohol interferes with chymification and chylification, hindering the proper neutralizing action of the bile on the chyme, and thus producing a morbid condition of the materials out of which blood is to be formed. (*c*) The liver, and (*d*) the kidneys, becoming themselves diseased, do not depurate the blood properly. (*e*) In consequence of pulmonary irritation from the expired alcohol and bronchial catarrh, respiration is not properly performed, and the blood, from this cause as well as from (*a*), is not properly arterialized. Scharlau has found 30 per cent. more carbon in the blood of a drunkard than in that of a healthy man. The effects of continued abuse of alcoholic liquors may be briefly stated as disordered conditions of the primary and secondary assimilating processes; the latter appearing, in the more advanced stages, with nervous and muscular debility.—*Brit. and For. Medico-Chirurgical Review, July*, 1853, *p.* 32.

12.—*On Albumen in the Urine after Scarlatina.* By Dr. H. Bence Jones, F.R.S., &c.—[In a lecture on the relation of renal disorders to various diseases, Dr. Jones remarks:]

The question of the passage of the scarlet-fever poison out of the system, through the kidney, has still to be proved. The general treatment differs in no respect from that of Bright's disease. Except that recovery is more frequent, and that the symptoms yield more easily to treatment, I know of no difference between this disease and Bright's disease. Mercurials are as dangerous in the dropsy after scarlet fever as in Bright's disease. Diuretics are as much to be avoided; sudorifics and aperients are as beneficial. In extreme cases of both diseases, the benefit of elaterium might be illustrated by many examples, if my time admitted me to read them. In both diseases the blood becomes impure, from the accumulation of the products of the organic changes in the body. I might sum up the objects to be attained, if possible, in these few words, namely, relieve congestion, and purify the blood. The appearance of albumen in the urine in cholera is caused by passive congestion of the kidney, while the albumen in rheumatic fever is the result of active congestion. The albumen after scarlet fever may also, at least as regards its treatment, be considered as produced by a state of more or less active congestion of the kidney.—*Med. Times and Gazette, Sept.* 10, 1853, *p.* 258.

13.—*Cases of Acute Renal Dropsy—Complete recovery.* Under the care of Dr. Budd.—[After describing two cases of the above disease, in commenting on the treatment Dr. Budd remarks that the first thing is to relieve the inflammatory or congested conditions of the kidney, and that the best means of doing this are:]

1. General bleeding or cupping on the loins; or, if the patient cannot well bear the loss of blood, large mustard-poultices applied daily to the loins, for the sake of drawing the blood to the surface.

2. Compound jalap powder, or some other purgative of like action, in full doses, so as to cause copious watery discharges. These not only relieve congestion of the kidney, but probably serve to eliminate through the bowels noxious matters in the blood, which must always exist when the action of the kidneys is very defective, and which, indeed, sometimes exist previously, and conspire, with the influence of cold and wet, to produce the inflammatory or congested condition of the kidney in which the disease consists. No purgative is more generally suited for such cases than the compound jalap powder, and it is best given in a single dose, sufficient for the object desired, in the morning before breakfast. It then, in addition to the drain it causes from the mucous membrane, only sweeps away the refuse of digestion in the bowels; whereas, if it be given during the course of the day, it sweeps away food which the stomach has had the trouble to digest, but the nutritious elements of which are not yet absorbed.

3. After the congestion of the kidneys has been somewhat relieved by these active measures, it may be further much lessened by promoting free perspiration. Suppressed action of the kidneys, by the influence of cold and wet, seems to be a frequent exciting cause of acute and renal dropsy, and afflux of blood to the extended surface of the skin and free perspiration greatly relieve the congestion of the kidneys. Perspiration may be promoted by warmth; by the liquor ammoniæ acetatis, given alone, or in conjunction with ipecacuanha and camphor mixture; and, if need be, by an occasional hot-air bath.

4. A fourth means of relieving the kidneys is by keeping the patient strictly confined to bed. The warmth of bed promotes perspiration, and the horizontal posture tends to relieve congestion of the kidneys by facilitating the return of blood from them, and by lessening the rate of the pulse.

The active measures that are expedient, with the view of relieving, as speedily as possible, the congestion of the kidneys,—the continual escape of albumen in the urine, and the spare diet that must, of course, be enforced while feverish symptoms exist,—soon induce a state of anæmia, so that when the case, as happened in the preceding instances, terminates favourably, and albumen has ceased to pass off in the urine, small doses of the citrate, or some other preparation of iron, are generally useful.—*Med. Times and Gazette, May* 28, 1853, *p.* 553.

14.—*On the Use of Proteine in Scrofula.* By J. Taylor, Esq.—[Although proteine at first sight is a compound little qualified to act as a remedial agent, yet there *is sometimes conspicuous* evidence of its therapeutic effects, as in the following case:]

John H——, aged five years, a scrofulous boy, born of scrofulous parents, has

had enlarged cervical and inguinal glands since the period of dentition; has now numerous ulcers in various parts of the body and limbs; is pale and emaciated, with defective appetite; has been taking iron and other tonics, with and without iodine in combination, during the last six weeks, without any evident improvement. Ordered, three grains of proteine, to be taken three times a day, in sugar and water. After the first week the boy was decidedly better in his general health, looked more healthy, appetite improved considerably. In a month the mother remarked "she never saw such a change;" the boy was growing plump, many of the ulcers had healed, though a few fresh ones had appeared. The dose of proteine was increased to four grains three times a day, and the ulcers to be dressed with zinc ointment.

Third month.—All the ulcers have healed except four, and when a fresh one appears it is much smaller than usual. Increase the dose of proteine to five grains three times a day.

Fourth month.—Three or four recent small ulcers still open; the boy's health so much improved that his aunt, who had not seen him for six weeks, did not know him again, and his father observed that as the boy was so much better, it would be needless to incur any further expense, and requested the medicine might be discontinued. The proteine was consequently omitted for a fortnight, and the little patient's health was observed to decline. The parents therefore requested the medicine to be resumed, and his health rapidly improved again. The proteine was continued for about two months longer, in not more than five-grain doses, twice, and sometimes only once, a day, embracing altogether a period of somewhat more than six months, when my little patient was observed to be quite well.

It may be remarked that this solitary case proves nothing. I could produce others, but the following may suffice:—

Jane B——, aged two years, an emaciated, strumous child, with tumid abdomen and enlarged cervical glands, and numerous ill-conditioned ulcers on the loins, nates, thighs, legs, and arms, has evinced symptoms of mesenteric disease ever since weaning, at nine months old; has been under the care of a surgeon for a month, and during that time has been gradually getting worse. Ordered zinc ointment, and occasionally a poultice of equal parts of linseed-meal and wheaten flour to be applied to the ulcerated parts; and to take, proteine, two grains, soda exsiccata, one grain, three times a day, in sugar and water.

First week.—The skin has become cleaner and more healthy, and some of the ulcers have healed; several that are now open display in a very remarkable manner the appearance of softened tubercles; the child looks more lively; bowels regular; appetite better; takes beef-tea twice a day, and milk night and morning. To have mutton for dinner.

Second week.—Greatly improved in every respect; has begun to run about again, which she has been incapable of doing for the last six weeks; nearly all the ulcers have healed; abdomen smaller; has gained flesh; appetite excellent; bowels regular; sleeps well. Ordered the proteine to be continued in doses of three grains, soda exsiccata, one grain, twice a day. The mother did not bring her again, but I saw her on passing the house a month afterwards, running about in excellent health and spirits.—*Lancet, Sept.* 24, 1853, *p.* 281.

DISEASES OF THE NERVOUS SYSTEM.

15.—ON NERVOUS DISEASES.

By Dr. George Johnson, Assistant Physician to King's College Hospital, &c.

[Dr. Johnson here dwells upon the slighter forms of nervous derangement from which the more serious ones—as epilepsy, insanity, or delirium—are developed. He says:]

The general results of my observations with reference to the class of diseases to which I have alluded are: 1st. That in a large proportion of cases the more formidable derangements of the nervous system have their origin in some form of mental shock or anxiety. 2nd. When the nature and the origin of these nervous disorders are detected sufficiently early, the more serious forms of disease may often be prevented, and the slighter derangements entirely removed. 3rd. The method of treat-

ment best adapted for the prevention and cure of the diseases in question admits of some variation in different cases, according to the nature and the cause of the symptoms; but there is one remedy which, when given in the mode and with the precautions which I shall hereafter indicate, is more efficacious than all others combined. That remedy is opium.

[Of such importance does Dr. Johnson consider opium in these cases, that he says he might have headed his paper, "On the influence of opium in preventing and removing some of the injurious consequences of over-work and anxiety." He exemplifies the chief varieties of these affections by a reference to a few cases.]

Case 1.—The first case is that of a woman, L. H——, 41 years of age, whom I first saw at the dispensary, on the 6th January, 1851. She had been a widow eighteen months, and for a long time before her widowhood, she had suffered much from anxiety, in consequence of the intemperate habits of her husband, who had squandered his money, and failed in business. For many months before I saw her she could not sleep without being disturbed by frightful dreams and spectral visions. Her friends told her that she talked as much in her sleep as when she was awake; she drank neither beer nor spirits. She had friends who were well off, so that she had never been in want; but her appetite was extremely bad, and she suffered much from flatulence and constipation. She had a painful sense of pressure on the top of the head, and her countenance was expressive of great anxiety. She had, at different times, been under the care of three medical men: one had called her disease tic-doloureux; another, she said, spoke of it as ague; and a third attributed her sufferings to inaction of the liver. She had been cupped and leeched, and several times blistered, but without effect.

It appeared to me that trouble and anxiety had disturbed her sleep, and taken away her appetite for food; and, as there was no evidence of any organic disease, I anticipated great relief from a few nights of quiet sleep, if by any means that could be obtained. With this view, on the 6th of January, I ordered five grains of the compound soap pill to be taken every night, and a mixture, containing rhubarb and magnesia, with peppermint-water, to counteract the constipating effect of the opium. I told her to walk out daily, and I gave her hopes of speedy amendment.

She came to me on the 13th of January, and said, that she had slept better the first night after taking the pill, and on the second night still better; she had rapidly improved in every respect, and had a bright and cheerful expression of countenance. To continue the medicine.

My last report of her is dated the 17th January, and it is as follows: She considers herself quite well; she sleeps well without dreaming; the sense of weight on the head is gone; her appetite is good, and she has no discomfort after eating; she "feels quite a different person."

The simple explanation of this cure appears to be, that ten nights of sound sleep had sufficed to remove the wearying effects of many months of anxiety and restlessness. With reference to the question of prognosis, it is important to observe, that the chief cause of her troubles had long ceased to exist; her husband's intemperance, his misfortunes, and his death, had occurred many months before; what she needed was something which would, as it were, break the habit of dreaming restlessness, and opium has a marvellous power of effecting this object. This case is the type of a large number which have come under my observation, and in which the effects of a similar plan of treatment have been equally satisfactory. I will next give a few particulars of a case which differs from the preceding in the important fact, that the original cause of the patient's anxiety and illness was in active operation while he was under my observation, and consequently the treatment, although at first very successful, yet did not avail to prevent the development of confirmed epilepsy.

Case 2.—On the 17th March, 1851, I was called to see a merchant's clerk, J. R. S., aged about 28 years. I was told, that during the last three days he had been seized with fits of violent delirium. When I arrived, he was quiet, and answered questions rationally. His skin was cool and moist; his pulse was moderately quick and soft, and his pupils were natural. I found that his head had been shaved, his temples leeched, and his neck blistered, and he had been kept on a rigidly low diet. The *result of* this treatment had been an increase in the violence of the delirium. I *ascertained, not only from his* family, but also from his employers, who were friends

of my own, that he was a very well conducted man, and of strictly temperate habits. His wife told me, that for several weeks before his illness his nights had been very disturbed; that in his sleep he had talked almost incessantly of his business; that in the mornings he appeared unrefreshed; that his appetite had been bad, and he had been gradually losing strength. When I inquired if he had been in distress or anxiety I was, at that time, told that the fatiguing and harassing nature of his employment was the only cause for anxiety of which his family were aware. It seemed evident, that the case should be treated as one of delirium from exhaustion; and accordingly I ordered him to take a mutton chop with a glass of porter, and at bedtime a draught containing forty minims of tincture of opium. The next day, I found that he had slept well, and there had been no return of delirium. He rapidly recovered, and at the end of a week he returned to his employment.

About three weeks after he had returned to his work, I was asked to see him in his employers' warehouse, and I found that he had suddenly fallen in an epileptic fit, while engaged in washing his hands. I again inquired particularly for causes of anxiety, and again the only cause assigned by his family was the fatigue of his work. I saw him again in May, when I found that his nights were still much disturbed by dreams, and he was occasionally light-headed. I gave him strict directions as to diet and the general management of himself, advised him to take the compound soap pill occasionally at night, and to change his occupation, if he really believed that the fatigue of it was the occasion of his restlessness. The last piece of advice he had a natural unwillingness to adopt. He came to me again the last week in October, and told me that he had that morning been seized with a fit in the street, and further, that since he last saw me, he had had five or six fits, but on each occasion, except the last, he was in bed when seized. His wife told me, that his nights were constantly disturbed by dreams; that he talked, moaned, and frequently called out in his sleep. He was now afraid he should lose his situation.

It was not until the month of February, 1852, nearly a year after I first saw the patient, that I ascertained the real cause of his anxiety. His father then told me that my patient's wife was a drunkard, and that when intoxicated she was extremely violent; that she had more than once threatened to stab her husband, and on one occasion she had actually wounded his hand with a knife. My informant had from the first been aware that this was the cause of his son's restlessness and misery; but he had been unwilling to speak of it until matters were becoming desperate. The fits continued, and the poor fellow was compelled to resign his situation.

It is evident, that the information thus tardily given is the central fact in the history of this case, and that it was essential for the complete explanation of the phenomena. I had been assured by the patient's employers, that his work was not such as could injure any man of ordinary strength; so that there seemed no satisfactory explanation of his continued suffering until this part of his sad domestic history was revealed. The next case is one in which some very distressing nervous symptoms speedily yield to treatment.

Case 3.—A shoemaker, J. B., 31 years of age, came to the hospital on the 15th of January, 1852, and stated that about ten months before, he, his wife, and five children had typhus fever. They all recovered; but at the same time he lost, from the same disease, a brother (who died in the bed next to his own at the Fever Hospital), his mother, and his wife's father. Since this accumulation of illness and anxiety, he "has been unable to rally himself;" has felt melancholy; has experienced a sense of weight and noise in his head, and dimness of sight; he has had "shocking dreams," so that he has dreaded to go to sleep; when walking in the streets he is often seized with dizziness, so that he would fall if he did not lean against the wall for support. He has a dread of sudden death. He is of middle height, well nourished, but with a very anxious expression of countenance. He works twelve or fourteen hours a day at his business, and usually has a walk daily. He says that he never was addicted to drink, and he presents no indications of intemperance; his appetite is good, and his tongue clean. He attributes his nervous condition to the fever, and to the mental anguish which he suffered; particularly, as he says, when, on going to the Fever Hospital, he left his wife and all his children ill at home.

On the 15th January, I ordered pil. saponis co., gr. v., om. n., and a mixture containing rhubarb, carbonate of ammonia, and peppermint-water twice a day, to counteract the constipating effect of the opium.

On the 20th January the report is, that he begins to sleep better, and his countenance is somewhat improved. Rep.

24th.—He does not know when he has slept so well as he did last night; he feels better, has less dread, and less sense of weight, and noise in the head. Rep.

On the 12th of February the report is, that he has been going on very well, and is improving in every respect. He has taken no opiate pill for the last ten days, but he has slept well all night without unpleasant dreams; the sense of weight on the head is gone, and his spirits are good; he has less noise in the ears, and his sight is improved. Since the 27th of January he has taken, Ferri sulph. gr. ii., infusi quassiæ 3i., ter die. To continue this.

Some days after the last report I met him in the street, when he told me that he was quite well, and had not thought it necessary to come again to the hospital.

The phenomena of this case admit, as I think, of no better explanation than this,—that, to use the patient's own words, "he had been unable to rally himself" from the state into which he was thrown by the conjoint influence of the fever and intense mental anxiety. An opiate pill, taken for about eighteen nights in succession, soon procured for him sound sleep, unbroken by the horrid dreams which had distressed him for the previous ten months; he was refreshed by this sleep, and quickly regained his usual state of health.

While I was engaged in writing this lecture, I called on this patient, and ascertained that he still suffers in some degree from a sense of weight and noise in the head, and he looks somewhat anxious, but his sight is good; and, although he has had much anxiety from the death of his two children, he has never relapsed into the nervous, restless state, which he presented when first he came under my observation.

The next case will serve as an illustration of the terrible results which may ensue when the state of dreaming restlessness which existed in the preceding case is permitted to continue unchecked.

Case 4.—A. S., a warehouseman in a printing-office, 29 years of age, came to the hospital on the 5th July, 1851, and stated, that he was subject to epileptic fits. I perceived that his intellect was confused, and his memory bad, and I requested him, when he next came, to bring his wife with him. I found that she was a very intelligent woman, and it was from her that I obtained the chief part of the following remarkable history. Her husband has always been a sober and well-conducted man, and he never had any serious illness until he became subject to fits, the origin of which she thus accounts for. About seven years ago, he was returning with his wife and some friends from Epsom races, when a child accidentally fell under the wheel of his chaise, and was killed. The poor man was much shocked and distressed when he saw the dead body of the child, whose head had been crushed by the wheel. In the course of the following night, he started up in his sleep, and called out, "Oh, save the child!" He continued to do the same almost every night, and sometimes two or three times in one night. When he started up in this manner, he often screamed so as to awaken and terrify his children, at the same time he struggled and clutched with his hands; and when his wife aroused him he generaliy appeared quite unconscious that he had been dreaming or making a noise. At other times, he complained of having frightful dreams, and, putting his hand to his head, would say, that he felt as if he were going out of his mind. Sometimes he exclaimed, "That child haunts me night and day!" at other times, "There is that child again!" and often, when in the street he has seen a child near a horse, he has been in great terror, and his hands have clutched convulsively. The phenomena, which I have described, continued without addition for two years, but about the expiration of that period, he was seized one morning soon after getting up, with a sudden and violent fit of convulsions. About two or three weeks afterwards, he had two similar fits while in bed, and in about six or seven weeks after this, he had another attack. The fits, which are evidently of an epileptic character, have frequently recurred up to the present time; he has sometimes had three or four fits in a day, and on one occasion he had as many as five attacks in one day. The longest interval between the fits has been eight or nine weeks. His wife has observed that the fits have always been more frequent when he has been weakened by any means. The only occasion on which he had as many as five fits in a day was this,—he went as out-patient to one *of the hospitals*, and while there he was seized with a fit. Immediately after the fit *was over, he was cupped on the* neck; the operation was quickly followed by another

fit, and in the course of the evening he had three more attacks. These facts seem to be in opposition to the theory, that cerebral congestion is an essential cause of epilepsy. One of the most remarkable features in the history of this poor man is the fact, that he has continued to be haunted in his sleep almost every night by the same horrid vision of the child, with similar startings up, screams, and exclamations. This had occurred, as his wife assured me, so lately as during the night before these notes of his history were taken.

Rather more than a year ago, his wife found him, after one of the fits, preparing to cut his throat with a razor. He said, "He had been told to do it, and he must." He then became quite maniacal, and continued so for two or three days. About six months ago he once attempted to jump out of a window, and about a month after this he wandered away from home for two nights and a day, and then returned in a distracted state, without being able to give a better account of himself than that "he had been taken to a station-house by the police, and that he had been by a pond of water; but he did not know whether he had intended to jump in or not." He has once fallen down stairs, and has often been brought home bleeding from having fallen in a fit in the street. His wife, who is apparently a strong-minded and courageous woman, has been so much harassed by his long and painful illness, that she is disturbed by unpleasant dreams, and often gets out of bed in her sleep.

When I saw him in July, 1851, he had the appearance of rather robust bodily health; he was of middle height, and his limbs were firm and muscular; his head was well formed; his hair and complexion dark; his expression was heavy and fatuous; he had been well educated, but since the commencement of his illness his memory had gradually failed, and all his mental faculties appeared to be more or less impaired. There was no loss of sensation or of the power of motion. He complained of constant pain in the crown of his head, but his appetite was generally good. I lost sight of him quickly after I learned his history, and I had no opportunity of observing the effect of treatment. There was little ground for hope in so inveterate a case; but it is probable that much of his mental and bodily suffering might have been prevented, if, at any time before the occurrence of the epileptic attacks, he had taken for a few nights some opiate pill or draught; and if by that means the habit of dreaming had been broken, as my experience of many analogous cases has taught me that it probably might have been. The history of this case well illustrates the tendency which the habit of dreaming restlessness, when once established, has to perpetuate itself, and to induce other serious consequences.

I will now give a few particulars of a case, which will serve to show, that great relief may sometimes be obtained even after the symptoms have existed for a very long time.

Case 5.—R. M., a tailor, was 32 years of age when he first came under my observation, in October, 1850. He had been a delicate child, but, after the age of 9 years, he became healthy and strong, and continued so until nine years ago, when he had reached the age of 23. At this time, his father, who had a very good business, absconded, taking all his property with him, and leaving his family destitute. My patient was the eldest son, and he now had to provide for thirteen persons besides himself, including his own wife and one child. From this time he was fearfully harassed, and has suffered the usual horrors,—restless nights, spectral illusions, and confusion of thought, to a degree which has often rendered it impossible for him to attend to business; he has, besides, been distressed by temptations to commit suicide, which he has been enabled to resist only, as he says, by the force of religious principle, which he happily imbibed in his childhood. At one time, for a period of two or three years, he was so nervous as to be incapable of taking care of himself, and he had two men to guard him. His habits were always strictly temperate. It may be well to state, that this history was obtained, partly from himself, and partly from his wife, who is a very intelligent and, to all appearance, a very truthful woman.

When I first saw him, he was tolerably well nourished, but his face was pale; his expression was torpid, rather than anxious; his sleep was disturbed; he complained of great confusion of thought, and of "losing himself;" he was desirous to take a situation as foreman in a shop, but he had no confidence in his ability

to discharge the duties of such an office; he had a slight cough, and a great dread of consumption.

I did what I could to encourage him. I assured him of his freedom from bodily disease, and of my hopes that he might recover. I advised him to take a walk daily in the open air; and, on the 28th of October, I prescribed pil. saponis co., gr. v., om. n., et tinct. ferri sesquichl. ℥xx., inf. quassiæ ℥j. ter die.

On the 11th November, the report is, that his appetite has been much better since taking the medicine; he now sleeps soundly. Rep.

Nov. 18. He is looking much better and brighter; he now feels that he can do his work, and he is confident that he shall get on and recover. He has had no confusion of thought the last few days. Rep.

Jan. 13. He has continued to improve since the last report, and considers himself now quite well; his countenance is natural, cheerful, and intelligent; he sleeps well, and has neither dreams nor fears; "life is now a pleasure to him, instead of being a constant dread." He has no work at present, but he feels quite fit for work. He has continued to take the mixture regularly, but the night pills only occasionally.

March 17. Two days after my last report, he undertook the management of an extensive tailor's business, which he conducts with ease and comfort to himself, and to the entire satisfaction of his employers. He sleeps well, without dreaming; his appetite is good; he declares that he was never better in his life, and his wife is of the same opinion. He looks perfectly well and strong. Since the last report he has taken no medicine, except an aperient pill occasionally.

In no other case which has come under my observation have symptoms so serious, and so long continued, disappeared so speedily and completely as they did in this instance. The improvement, too, has been permanent. I saw this man so recently as the 15th March, 1853, when he told me, that he has continued in the same situation for a period of two years, and, although his employment is very laborious and harassing,—his hours of business being from seven in the morning until ten or twelve at night,—he has not been one day absent on account of illness. He sleeps and eats well, and his countenance is cheerful and intelligent.

The five cases which I have thus briefly described will suffice to convey an idea of the general character of the symptoms which may result from the influence of mental shock or anxiety. I proceed now to the consideration of the most frequent *causes* of mental anxiety, with a view to facilitate the recognition of them by those who are investigating the history of nervous diseases.

The causes of mental anxiety are very various, both in kind and degree; the influence, too, of the same causes is greatly different upon different classes of minds, the difference being dependent partly upon the original constitution of mind and body, and partly upon education and habits of life. It will be needless to dwell upon those causes of mental anxiety whose influence is immediately and universally recognised,—such as the illness or death of friends, or, what is sometimes worse than illness or death, the misconduct of any one in whom a deep interest is felt; reverses of fortune; failures, and disappointments in business. The operation of these causes is so obvious, and so powerful, as to be at once perceived, even by the least observant. It is of practical importance to notice the different effects upon mind and body which are produced by grief for past and present calamities, and by the dreadful anticipation of future evil. I am persuaded that the last-mentioned influence is, on the whole, the most frequent and the most powerful. There are few men or women who have not dreaded a hundred evils which have never come upon them; and every physician must have observed the miserable consequences of an over-anxious care for the future. Any doubt which may at first arise as to the correctness of the statement, that the dread of future evil is, on the whole, more injurious, both to body and mind, than even the influence of present care and sorrow, will, I think, be removed, if we consider how much the dread of future and uncertain consequences is mingled with, and adds to the weight of most of those evils which are actually present. I have found the recognition of this fact to be essential for correctly interpreting the mental and bodily condition of some of my poorer class of patients; and I will illustrate my meaning by one or two examples *which are not* exact transcripts of any single case, but which are drawn from a *multitude of observations*, and which I believe to be strictly true to nature.

A tailor, of middle age, who has had no previous illness, complains that, for several weeks past, he has been losing flesh and strength; his appetite has fallen off, and his sleep has been disturbed by frightful dreams and spectral visions. He has a sense of weight on the head, and his sight is becoming dim; he is distressed by palpitation and shortness of breath, and his pulse is slightly quicker than natural, but soft and compressible, and there are no physical signs of disease within the chest; he has some dyspeptic symptoms, perhaps a sense of weight and fulness, with flatulence after meals, but his tongue is clean, and the urine presents no important deviation from the normal condition. We see in the expression of the patient's face unmistakable indications of an anxious mind, and we begin to make inquiries respecting his history,—inquiries such as a patient will rarely hesitate to answer when he perceives that they are not suggested by an impertinent and unfeeling curiosity, but that they are prompted by a hearty sympathy with his sufferings, and an earnest desire to obtain such an insight into their nature and origin as will best enable the physician to afford the relief which is sought for at his hands. The result of our inquiries is, that he is of strictly temperate habits, and that he has had no great trouble or cause for sorrow; his wife and children are well; he has had regular employment, and he is not in debt. If we ask why, then, he appears and is so nervous and anxious, he will perhaps reply that he cannot tell, for he does not know. Pursuing our inquiries, with a firm belief that such a group of symptoms, and such an expression of countenance cannot be unassociated with mental anxiety, we find that he has a family of six children, and that, in order to support them, and to keep himself free from debt and difficulties, he has been working at his trade for sixteen, or perhaps eighteen hours, a day; that for a long time he continued to do this without much inconvenience; but a few weeks or months ago he began to sleep less soundly than formerly, he felt tired in the morning, his appetite and strength diminished, and he then went through his day's work with difficulty. At this point mental anxiety began, for increasing weakness naturally suggested a doubt as to his ability to continue his work; and then came a dread of consequences. How are he and his family to live when he is unable to work? His fears increase all his difficulties, for they suggest frightful visions in his sleep, and a dread of some bodily disease almost paralyses him when awake; his sight is growing weak, and he anticipates total blindness; his heart often beats violently, and he believes that it must be in a state of incurable disease.

I have many times observed the group of symptoms which I have described in needlewomen, who frequently work the whole day and half the night, in hot and ill-ventilated rooms, who rarely have an opportunity for taking exercise in the open air, and whose earnings are so small as barely to suffice for the maintenance of themselves and others who may be dependent on them. In such circumstances, an apparently trifling cause, some slight illness, which partially unfits them for work, or a temporary lack of employment, or inability to complete a certain amount of work by a given time, will suffice to give rise to a train of nervous symptoms, which, probably, will continue and increase, unless checked by the timely administration of remedies. The group of symptoms which I have referred to may occur both in men and women whose habits are strictly sober; and I have repeatedly seen them in patients who, for a long time, have entirely abstained from the use of fermented liquors. It is scarcely necessary to say, that intemperance will aggravate the effects of anxiety to an extreme degree, and that in many instances, the consciousness of this degrading habit, and the miseries which it brings with it, are the chief causes of the anxiety, which, acting upon an ill-nourished and weakened body, excites those nervous symptoms to which the drunkard is liable. The effects of over-work and anxiety upon persons of strictly temperate, and even abstemious habits, are sometimes quite identical with the well known symptoms of delirium tremens. One of my patients, whose habits had for several years been temperate, was suffering, when he came under my observation, from anxiety consequent upon the loss of his money; and he assured me that his dreams and spectral visions were then precisely similar to those which he had formerly experienced when he had delirium tremens from intemperance. He was quickly cured, too, by the treatment which would have been appropriate for delirium tremens. Now, the most reasonable explanation of the identity of symptoms arising from causes so apparently dif-

ferent appears to be this—that in both classes of cases, there is mental anxiety, although different in its nature and origin; and this mental anxiety is the most important element concerned in exciting the morbid phenomena. It is too obvious to require comment, that the delirium which is caused by the presence of alcohol in the blood—the delirium of intoxication—is entirely different from that which is called "delirium tremens." The latter form of delirium does not come on so long as mind and body are under the stupefying influence of the alcohol, but when, after, it may be, a week's debauch, the man awakes to a consciousness of his condition; his money gone, disgrace, and perhaps debt incurred; then it is that delirium occurs, excited, as is probable, by the conjoint influence of a mind agonised by remorse and fear, and a body enfeebled by the insufficient supply of food which is generally involved in a fit of drinking. An Irishman once came to the hospital, and described to me certain nervous symptoms from which he had suffered for a period of three or four weeks. His sleep was disturbed by frightful dreams, his spirits were depressed, and his appetite bad. He was habitually very abstemious, but immediately before the commencement of these symptoms he had been once intoxicated, and he attributed his nervous symptoms to the regret which this lapse had occasioned him. I believe that his explanation was correct, and I have met with other similar instances, which confirm me in this opinion. I am desirous to guard against the notion, that the delirium and the other nervous symptoms which supervene upon intemperance are attributable to the merely physical consequences of that vice. No one, I am sure, could be found to maintain such a proposition in the abstract; but there is reason to believe, that both our pathology and our practice are sometimes tinged with a belief to this effect.

It is of essential importance, with reference both to the pathology and the treatment of delirium, to recognise the fact, that, in a very large proportion of cases, there is a mental as well as a bodily element; in some instances the mental influence preponderating, and in others the corporeal. There can be no question as to the important share which the mind has in the production of those nervous symptoms, which are frequently occasioned by immoderate intellectual exertion. In such instances, while the body is enfeebled by the neglect of wholesome exercise, and by the loss of the required amount of sleep, the mind becomes morbidly excited and anxious, and this occurs indifferently, whether the excessive labour be the result of necessity, or whether it be prompted by an inordinate desire of wealth or by an ambitious craving for distinction. In these cases, too, as in the case of the overworked tailor or needlewoman, the mental anxiety will increase in a rapid ratio as the gradual exhaustion of mind and body renders the attainment of the object so eagerly sought for more difficult and doubtful. And here, too, it may be observed, that indolence and neglect of duty often occasion as much mental disquietude as excessive labour and fatigue. Those who *kill time* are not unfrequently

> "Haunted much by visions strange,
> And sore perplexity of roaming dreams,—
> The spectres manifold of murdered hours."

The infringement of moral laws brings discomposure and anguish upon the mind, as a physical injury gives pain to the body. Both classes of pain, too, are protective and beneficent in their design and tendency.

That form of delirium which has been so well described by Dupuytren, under the name of *traumatic delirium*, might appear to a superficial observer to have its origin in purely bodily causes. But it is acknowledged by those who have most accurately observed this form of delirium, that it bears no proportion to the extent of the bodily injury with which it is associated. Some patients remain free from delirium after the most frightful accidents, while others become furiously delirious after comparatively trifling injuries. Thus Dr. Todd quotes from Dupuytren the case of a young man, in whom delirium came on in consequence of a slight injury to one of his toes, and killed him in two days. I am persuaded that a careful attention to the previous history and the mental condition of these patients can alone reconcile these apparent discrepancies. A man who has been working to the full extent of his powers *to support his family*, and who has a laudable anxiety to keep free from debt and *difficulties, is, as we may say*, predisposed to become delirious, if he suddenly find

himself disabled by some accident, however trifling the injury may appear when considered only with reference to the body. If the habits of the patient have been previously intemperate, he is, for various reasons, the more likely to become delirious; for it is probable that the mind of such an one has been discomposed by the habitual neglect of his duties, while the body has been weakened by the substitution of alcohol for nutritious food; and if, in consequence of some accidental injury, his accustomed stimulus be withdrawn, and he be confined to bed with the unpleasant companionship of his own thoughts, delirium is a very frequent consequence, and one, too, which it is not difficult to account for.

We frequently meet with instances of severe and long-continued nervous derangement, as a result of a momentary but violent mental shock. Cases of epilepsy, in which the fits were the result of fright, are very common, and, in several instances which I have seen, the patient has been terrified into the fits by the cruel and wicked trick of dressing up a ghost. In one case, a little boy was frightened into confirmed epilepsy and paralysis by a policeman, who threatened to take him to the station-house, because he was making a noise in the street. The child ran a few yards, and fell in a fit at his mother's door. In another case, a man fell immediately in an epileptic fit at seeing another man killed by a fall from a scaffold. It is well known, too, that some nervous persons have been frightened into epilepsy by seeing the fits in others. And a very important practical lesson to be derived from a knowledge of this fact, is to protect the young and the nervous from so terrible a danger. Some time since, I heard of two twin brothers, about 14 years of age, one of whom became epileptic from some cause which I could not ascertain. They both continued to sleep in the same room; and the result was, that the second soon became epileptic too. In future lectures I shall return to the subject of epilepsy; and I shall refer to some of its most frequent causes and modes of origin, with a view to its prevention, in that numerous class of cases in which epilepsy is preceded by a long train of premonitory symptoms. As an illustration of this class of cases, I may refer to the history of the second and fourth cases which I have given in the present lecture.

The causes of sudden and violent mental shock are very numerous, and most of them are so obvious as to require no comment. One of my patients, a woman, has been restless and excessively timid since receiving a fright from the collision of two steamboats, and a false alarm that the boat on which she was travelling was sinking. The alarm of fire is a very frequent cause of long-continued nervousness. During the last two or three years, I have had several patients, both men and women, who had continued to dream of fire, and to be excessively nervous and timid, since the burning of the Olympic Theatre, near which they all lived at the time of the accident.

Within the last two years I have met with some instances of nervous restlessness, which the patients attributed to the dread they had entertained of the cholera when last it prevailed in London. These cases afford additional illustration of the tendency which this nervous condition has to perpetuate itself, and so to continue long after the original cause has ceased to operate. The cure of these affections is often not difficult; but I shall speak of that in my concluding lecture.

One of the chief objects which I have proposed to myself in the latter portion of this lecture has been to indicate some of those less obvious sources of mental disturbance and anxiety which are likely to escape the observation of any inexperienced pathologist who has not been prepared for their recognition. In directing attention to this subject, I have acted in the spirit of a suggestion which is contained in the following remarks by Dr. Latham:—"Prior to diseases, to their diagnosis, their history, and their treatment, prior to them, and beyond them, there lies a large field for medical observation. It is not enough to begin with their beginning. There are things earlier than their beginning which deserve to be known. The habits, the necessities, the misfortunes, the vices of men in society, contain materials for the inquiry, and for the statistical systematising study of physicians, fuller, far fuller, of promise for the good of mankind, than pathology itself."

The kind of inquiry here referred to and commended to our notice by Dr. Latham, is, I believe, an essential element of truly scientific pathology; and, with reference especially to diseases of the nervous system, its paramount importance is indisputable. It would not be difficult to show, that many serious errors which have pre-

vailed with regard both to the pathology and the treatment of these diseases, are attributable to a disregard of that portion of the patient's history which precedes the occurrence of actual disease.—*Med. Times and Gazette, Aug.* 13, 1853, *p.* 155.

16.—ON THE CONSEQUENCES OF MENTAL ANXIETY.

By Dr. George Johnson.

[The effects of mental anxiety are varied by many circumstances, as education, position in society, habits of life, &c.; but there are certain symptoms common nearly to all cases. Either there is sleeplessness, or the sleep is unrefreshing, and disturbed by frightful dreams, and, says Dr. Johnson,]

One of the consequences of mental anxiety which is as often as any other associated with the disturbed sleep to which I have already referred, is a more or less complete loss of the appetite for food. In only a very small proportion of the cases which have come under my observation have I been told by an anxious, restless, dreaming patient, that he could take his food as usual. In many instances, too, the digestive powers are much impaired; there is pain or a sense of fulness with flatulence after eating. In some cases severe gastrodynia with waterbrash and occasional vomiting are complained of. I am careful not to confound with the cases to which I now refer others of a different kind, cases of dyspepsia, which are the result of intemperance, or other cases in which the dyspeptic symptoms have been excited, or, at any rate, perpetuated and aggravated by a too liberal administration of stimulants to some weak and nervous patient, who has been exhausted by an attack of illness. It is very important that the physician should clearly perceive the nature of the last mentioned cases of dyspepsia, and that he should be alive to the danger incurred by a weak and anxious patient who takes wine and beer frequently and freely, because, as he says, he has no appetite for food. Such a patient should be warned that the first step towards the recovery of his appetite and the strength must be an entire suspension or a greatly reduced supply of alcoholic stimulants as an article of diet.

Returning now to the more immediate effects of mental anxiety, it is perhaps difficult to determine whether the loss of appetite is a consequence of the patient's sleepless condition, or whether the restlessness is a result of the diminished supply of food; or whether, as is probable, the two conditions exert a mutual influence upon each other. There are facts which seem to favour each of the explanations which I have suggested. Probably most persons have experienced, in some degree, the power of mental emotion to take away the appetite for food and to disturb the process of digestion. On the other hand, the influence of an empty stomach, or of a sense of hunger in preventing sleep, and of a moderate fulness of that organ in promoting drowsiness, is well known. One fact which I have very frequently observed, tends to show, that the disturbance of the nervous system, and the restlessness, are first in the order of time and importance, and that the derangement of the digestive organs is consequent upon these. I allude to the manner in which opium exerts its beneficial influence. A man who has been restless for many months, and who, during the same time, has not enjoyed a single meal, after taking a grain of opium at bed-time for a few nights, sleeps soundly for several hours, and then awakes with an appetite for food; refreshing sleep returns each night, at first with, and soon without, the help of opium, and the appetite often becomes voracious, like that of a patient recovering from a fever, or from some other exhausting illness. Now, it is contrary to all experience to suppose, that opium would, by any immediate influence upon the stomach, increase the appetite, or assist digestion. The tendency which it has to disturb the stomach, and to produce sickness, or nausea, is one of the difficulties which we sometimes have to contend with when we are most desirous to give the medicine. This well-known action of opium upon the stomach, and the fact, which I have observed in numberless instances, that the appetite returns only after the opium has procured sleep, tends to prove, as I have said, that the derangements of the nervous system, in the cases referred to, are first in the order of time and importance.

That the combined effect of loss of sound refreshing sleep, and loss of appetite, *with impaired digestion, should* be to affect, in a very marked manner, the nutrition,

and the strength of the entire body, is no more than we should have anticipated, and is what we actually observe. Emaciation and debility, in a greater or less degree, are present in almost every case where the primary symptoms have been of long duration. One man, who had suffered much from restlessness and frightful dreams, in consequence of anxieties in his business, assured me, that during a period of two years, his weight had diminished by four stone,—it had fallen from fifteen stone to eleven,—and this statement appeared quite consistent with the loose fit of his clothes. Another man, who had suffered in a similar way, in consequence of misfortunes, had lost, as he informed me, from two to three stone weight during a period of two years. This was one of the cases in which, after a long period of nearly total inability to eat or to digest food, a voracious appetite became almost a matter of complaint, after refreshing sleep had been procured by the temporary use of opium. Another patient, a woman, who had suffered from anxiety, restlessness, and loss of appetite for several months, had diminished in measure round the waist from 24 inches to 19. After taking five grains of pil. saponis co. for a few nights, she began to sleep well, and to eat so voraciously, that, as she told me, she felt ashamed to eat so much, and her husband was quite anxious about her great appetite. The result was, that within a month she had gained three inches in measure round the waist. These measurements were her own, but the rapid improvement in her appearance was quite confirmatory of her statement. It is obvious, that so considerable a defect of nutrition as I have indicated must react injuriously upon the mental disturbance in which it originated; for there can be little doubt, that the depressing and disturbing influence of mental emotion is, *cæteris paribus*, in proportion to the feebleness of the body; and this is a point of pathology which it is of great practical importance to remember. A pretty certain recipe for the production of delirium or some serious form of nervous disease, would be to take an anxious man, and to bleed, or purge, or starve him, or by any other means to reduce rapidly his bodily powers. It is painful to think in how many instances this mode of practice has been adopted by those who have been taught to believe, that furious delirium is a symptom of what is called phrenitis, and that the cure is to be attempted by the fearless use of antiphlogistic measures.

Not only does the enfeebled condition of the body react injuriously upon a disturbed and anxious mind, but the combined action of depressing mental emotion and of the bodily weakness which it induces, through the agency of sleeplessness and loss of appetite, tends to diminish the power of resisting injurious influences to which the body may be exposed, and to develope any germs of disease which may have been latent in the system. The origin of structural disease in various organs may, with reason, be classed among the consequences of mental anxiety. Nor is it surprising that this should be so, when we reflect upon the exhausting influence of long-continued abstinence and watchfulness. In one case which came under my observation, a poor woman, 34 years of age, actually died from anxiety and exhaustion, without the occurrence of any organic disease to account for the fatal result. I first saw her about a month before her death, when she presented every indication of great grief and anxiety. She had been unkindly treated and deserted by her husband, about five months before; and from this time she had suffered from sleepless nights, with spectral visions, and an almost total loss of appetite. She complained of shortness of breath and palpitation, and she had a cough, with mucous expectoration. The impulse of the heart was increased, and there was some large crepitation at the bases of the lungs. I gave her tonics and opiates, and encouraged her to walk out while she was able to do so, but all without benefit; she could neither sleep nor eat; she daily grew weaker, and died on the 28th of April, about a month after I first saw her. I examined the body on the 2nd May, and found congestion of the lower lobes of the lungs, some dilatation and hypertrophy of the left ventricle of the heart, without disease of the valves or aorta; and a remarkably liquid state of the blood, scarcely one coagulum being found in the heart or in the vessels. Both the liver and the kidneys were somewhat congested, and their secreting cells presented, on a microscopical examination, some slight deviations from the normal appearance. All the appearances observed might, as I think, be attributed to the altered condition of the blood, and this to the want of sleep and food. The anatomical changes were certainly insufficient to account for the poor woman's death. It is a question which does not admit of a very precise an-

swer, how far the hypertrophy and dilatation of the ventricle had been occasioned by the irregular and violent contractions of the heart which were excited by mental emotion, and in what degree they were dependent on any impediment of the circulation which may have resulted from an impoverished and abnormal condition of the blood.

The influence of mental anxiety in predisposing to attacks of disease in various organs, in diminishing the curative powers of nature, and in counteracting the effects of remedial measures, constitutes a subject of wide extent and of great importance. My present design is limited to a passing allusion, first, to some of the commonest forms of functional disturbance of the abdominal and thoracic organs, which are a frequent source of groundless alarm to the patient, and which may sometimes mislead the physician; and, secondly, I shall speak of those more formidable diseases of the nervous system, which often originate in, or are associated with, mental anxiety.

I have already adverted to those derangements of the digestive organs which are very commonly associated with mental anxiety. There is, however, one consequence of those derangements which I have frequently observed, but of which I have not yet spoken. I allude to the occurrence of symptoms referable to the urinary organs, and which sometimes occasion an unfounded dread of serious disease. Frequent micturition and pain in the back are the symptoms complained of, and these are often supposed, by an anxious patient, to depend on a diseased state of the kidneys or bladder. On examination, it is commonly found, that the urine is unusually acid, and deposits an abundant sediment of the lithates on cooling. The acid urine irritates the kidneys and bladder, and thus occasions the pain, and the frequent micturition. In other cases, the urine is alkaline, with a copious phosphatic sediment. These states of the urine are, of course, not peculiar to nervous or anxious patients, but, since any pain is a source of alarm to this class of patients, it is important that the practitioner should be prepared to give a correct explanation of the symptoms, and to apply the appropriate remedies. In some instances, the pain in the back is very severe, and its seat appears to be in the lumbar muscles; but I have met with more than one case of the kind which has been mistaken for inflammation of the kidneys, and treated as such. One of my hospital patients, a carpenter, had severe pain in the back, which he thought was caused by inflammation of the kidney, for he had a similar pain some months before, which was called inflammation of the kidney, and for which he was treated by cupping and other active measures. On that occasion, he was ill several weeks. He had a very anxious countenance, he was restless at night, and he had been for some time out of work. I gave him an opiate pill for a few nights; he slept well, and quickly lost the pain. He told me that the first attack of the pain, like the last, had come on when he was anxious on account of being out of work; I therefore concluded, as he did, that both attacks were of the same nature. He agreed with me, too, in the opinion, that the opiate treatment had been much more successful than the antiphlogistic measures which were adopted on the first occasion. It scarcely need be said, that many pains in the loins are quite unconnected with nephritis, and that, on the other hand, the kidneys may be acutely inflamed without a complaint of severe pain in the back. In all cases of the kind, a microscopical and chemical examination of the urine is essential for accuracy of diagnosis.

[Next we have obstinate constipation, succeeded by painful diarrhœa. We have also palpitation of the heart during the day, resembling that form which exists in cases of anæmia and chlorosis. This form is independent of that connected with the distressing dreams to which these patients are liable. In such cases we should be careful how we rashly imply to the patient the existence of any organic affection of the heart. Such a statement would only retard or entirely prevent the recovery. Besides these, we have important affections of the nervous system; amongst these we may class epilepsy. Bodily disorders are frequent causes of epilepsy; irritations from worms or teething, excessive use of alcoholic liquors, disease of the cranial bones, passage of calculi through the ureter, the presence of specific fever poison in the blood, or from poisons arising from suppressed secretions, as of the urine or bile. For the most part, however, these are transient and curable, unless they depend upon *some* permanent organic affection.]

Passing on now to the consideration of those cases of epilepsy which owe their

origin to influences acting primarily upon the mind, we find that they naturally divide themselves into two classes:—1st, Those which result from great terror, or excessive or sudden grief, and in which the first paroxysm usually comes on suddenly without being preceded by warning symptoms; and 2nd, Those which arise from the influence of continued anxiety, and which are preceded for a variable period by premonitory symptoms.

With reference to the first class of cases, I mentioned in my last lecture the chief causes of sudden shock or terror, which I have known to excite epilepsy. The most frequent have been the vision of a supposed ghost, witnessing a fit of epilepsy in another, or the sudden or violent death of another. One woman became epileptic from hearing of the death of an acquaintance; she immediately felt, as she said, a sudden "turn and agitation," and within an hour she had a convulsive fit. One girl attributed her fits to the fright of hearing a knocking, which she imagined to be supernatural; and a delicate, nervous boy, who is now under my care, actually became epileptic from the shock of seeing a horse fall and break his leg. When epilepsy results from a sudden shock of terror, the first fit usually comes on immediately, or within a few hours after the shock has been received. The only exception to this rule which I have met with occurred in the case of a man whose history I have already given, who, after seeing the violent death of a child, continued to dream of the accident, and, at the end of two years, became epileptic. In this case there can, I think, be no question, that the shock of terror was the exciting cause of the disease, and that this influence was perpetuated and increased by means of the continual restlessness and the frightful visions by which the poor man was nightly harassed.

In the great majority of cases, when an attack of epilepsy has been excited by fright, the fits return and constitute a permanent disease. In only one out of eleven cases which originated in this way, and of which I have either notes or a distinct recollection, has there been a single paroxysm without a return. In one other case the fits continued to recur for a period of five years, then ceased, without any obvious cause, for a period of fifteen years, and after this were again induced by great anxiety. A comparison of a great number of observations would be necessary to ascertain in what proportion of cases epileptic convulsions which have resulted from fright have a permanent tendency to recur after the first paroxysm; it is certain that the proportion is a very large one. It is an interesting but a very difficult inquiry what, in this respect, constitutes the difference between epileptic convulsions which result from sudden and violent mental emotion, and those attacks which are excited by the irritation of teething, and more especially by some specific fever poison, or by suppression of urine. The last case of renal epilepsy which I saw, occurred in a boy who had about twelve violent fits of convulsions in twenty-four hours; he was relieved by cupping on the loins; he recovered from the renal disease, and has had no return of the convulsions, nor is it at all likely that he will. It is evident, from the history of such cases, as well as from cases of puerperal convulsions, that the occurrence of one, or of several, attacks of epilepsy is not in itself a sufficient explanation of the persistent tendency to a recurrence of the disease, which is often left when the first paroxysm has been excited by great and sudden fear. It appears probable that, in such cases, the original shock of terror leaves a permanent morbid condition of the brain, although the precise nature of the change escapes our observation. No one who has carefully examined the structure of the brain, can deny or doubt, that an organization so wonderfully complex and delicate may undergo numerous changes which entirely escape our most refined means of investigation. One of the chief obstacles to the progress of mental and cerebral pathology has been, the tendency to attribute to the coarse morbid appearances in the brain and its membranes all the symptoms which may have existed during the patient's lifetime. It would not be difficult to extract, from published reports on the pathology of the brain, descriptions of precisely the same morbid appearances in connexion with a history of symptoms essentially different in different cases. The cautious pathologist, while he notes every abnormal appearance in the brain, will admit that changes more important still may entirely escape his observation. It is probable, that every thought, every sensation, and every movement of the body, is attended with some change in the texture and composition of the brain. No one expects to find traces of these living actions in the dead brain, yet such an expectation would

appear scarcely less reasonable than the attempt to find, in any *post-mortem* appearance which we can recognise, the essential cause of mental derangement, delirium or convulsions. "There are cases," to use the words of Dr. Gooch, "in reference to some disorders of the mind in lying-in women, in which observation of the disease throws more light on its morbid anatomy than its morbid anatomy on the nature of the disease; the living symptoms illustrate the dead morbid appearances better than the dead morbid appearances do the living symptoms."

It cannot be doubted, that many of the morbid changes which have been detected in the brains of epileptics are the consequences rather than the essential causes of the disease. We often have demonstrative evidence of the extreme vascular engorgement occasioned by the epileptic paroxysm; and it is not difficult to perceive that such a condition must be attended with serious risk of yet greater mischief. A short time since, I saw a footman, whose appearance, when he arose one morning, had excited great surprise among his fellow-servants. The conjunctivæ, eyelids, and other parts of the face, presented numerous spots and patches of ecchymosed blood. He told me, that, when he awoke, he found himself struggling violently, his mouth was bleeding, and, on examination, I found that the edges of his tongue had been injured by his teeth. He evidently had been seized with an epileptic fit, and the appearance of his face was sufficient proof of the degree of vascular congestion which that fit had occasioned. If the vessels within the skull had been ruptured to the same extent as those on the exterior, the result might have been a fatal apoplexy; yet this would have been no less a *consequence* of the epilepsy than was the subcutaneous ecchymosis. It is surprising that the epileptic paroxysms do not more frequently and speedily produce great and obvious structural changes in the brain than they ordinarily do. In one case which came under my observation, it is probable that the brain was seriously injured during the very first fit. A boy, five years of age, was terrified by a policeman, who threatened to take him to the station-house, for making a noise. He ran a few yards, and fell in a fit at the door of his home. After he came out of the fit, the left hand remained numb and weak, and he occasionally complained of pain in the left foot. These symptoms continued and increased; the hand became so insensible, that a blow from his schoolmaster's cane gave him no pain; and the leg became weak so that he slightly dragged it in walking. About six months after the first attack, he came home one day with a bruise on the temple, which was probably occasioned by his having fallen in a fit. On about three occasions after this, he was seized with convulsions when at home, and his mother believes that he sometimes had fits when in the street. He often complained of headache, which increased towards the end of May, 1847. This was about two years after the first fit. I first saw him on the 31st of May; he was then insensible, with squinting; the face was flushed, and the scalp hot. He continued in the same state until the 5th of June, when he died.

On opening the head, the lateral ventricles were found to contain a large quantity of clear serum. In the tail of the right corpus striatum, there was a hard swelling, about the size of a small hazel-nut, which projected against the contiguous surface of the optic thalamus. When cut into, it presented a yellow colour, and had somewhat the appearance of firmly contracted fibrin. There can be little doubt that this indurated mass was the cause of the partial paralysis of the left hand and leg. It is not probable that it was in any way the cause of the epileptic fits, but more likely that it was a consequence of these; and the partial palsy which remained after the first fit of epilepsy renders it probable that the corpus striatum was injured during that convulsive paroxysm. —*Med. Times and Gazette, Sept.* 3, 1853, *p.* 233.

17.—ON CASES OF EPILEPSY ARISING FROM MENTAL ANXIETY.

By Dr. George Johnson.

[Dr. Johnson has previously described cases of epilepsy arising from sudden shock or terror. It is evident that when the disease arises from the above cause it must be much slower in its development. It is highly probable, however, that the nature *of the disease* is the same, produced by either cause.]

The epileptic disease which results from the shock of violent grief or terror,

usually commences quickly after the occurrence of the shock, and is, in fact, unavoidable; while, on the other hand, those cases of the same disease which originate from over-work and anxiety, or from the influence of continued grief, are almost invariably preceded by a train of warning symptoms; and it is during this period of incubation of the disease that preventive treatment may be resorted to with a reasonable hope of success.

The sources of mental disturbance and anxiety which I have observed to terminate in epilepsy, have been grief on account of the illness, or death, or misconduct of relatives and friends, loss of money, failures and disappointments in business, and, among the poor, over-work or insufficiency of work, with its attendant anxiety and low diet. In two of the seventeen cases to which I have referred, anxiety was combined with intemperance; but I have retained them in this class because mental anxiety appeared in both cases to be the most powerful influence. The cause of the anxiety was in one case the loss of a large sum of money, and in the other excessive labour as a tailor. In the latter case the poor man had been working two whole nights without going to bed; he then took an extra quantity of drink, and was seized with a fit while in bed. He became a confirmed epileptic.

In a former lecture I alluded to the importance of distinguishing that form of delirium which results from the immediate poisonous influence of alcohol in the blood, from the delirium which may more probably be referred to the combined influence of the mental anxiety and the bodily weakness which result from the too free habitual indulgence in alcoholic drinks. It is equally desirable to make a similar distinction with regard to convulsive attacks. With reference to prognosis the distinction is a very important one. When an epileptic seizure has occurred during a fit of intoxication, it may never be repeated if the patient is careful to avoid the like exciting cause; but when a man who is sometimes intemperate and continually nervous and anxious has once been seized with epilepsy while he is sober, the probability that he will be visited by a return of the disease is very much greater than in the case of a convulsive fit which has been immediately excited by intoxication. We will exclude from our present consideration all cases in which mental anxiety is not either the only or the chief cause of epilepsy.

The symptoms which precede the full development of epilepsy are, terrific dreams and visions, startings, talking, and sometimes screaming, during the hours of sleep; after which, a sense of fatigue in the morning, with pain, weight, or constriction in the head, loss of appetite, and weakness. These symptoms continue for a variable period,—sometimes for many months, but in other cases only for a few days before the occurrence of the first epileptic fit, which generally takes place in the night and during sleep. The nocturnal disturbances then continue, sometimes in an aggravated degree; and after an interval which varies from a few hours to many months, a second fit of epilepsy occurs, and so the disease is established.

It is needless to describe the well-known phenomena of epilepsy, or to advert to the blighting influence which the disease exerts upon the noblest faculties of the mind. My object is to direct attention to the premonitory symptoms, and to insist upon the importance of arresting the progress of these before the occurrence of the first epileptic paroxysm.

I must here guard against a possible misconception. I do not maintain or believe that every over-worked or anxious man who has unpleasant dreams, and who talks, or screams, or starts up in his sleep, will become epileptic. Such an opinion would be very unreasonable; but expressed in the hearing of a nervous patient, it might contribute much to bring about its own verification. I do maintain, however, that any one whose sleep is habitually and for a long time disturbed in the manner described, is in danger of incurring some serious form of nervous disease,—it may be epilepsy, or it may be an outburst of delirium or mania, or a sudden attack of partial paralysis, or that more gradual decay of all the cerebro-spinal functions to which the term "general paralysis" is applied. Some one or other of these terrible maladies may result from the long continuance of excessive labour and anxiety by day, with restlessness and terror by night. The object of treatment in such cases is obviously two-fold: 1st, To remove the cause, when that is possible; and, 2nd, To combat the earliest effects, with a view to prevent the occurrence of more serious disease.

Respecting the means of accomplishing these objects I shall speak more particularly hereafter; but it may be observed here, that, when our treatment is most suc-

cessful, we cannot know the full extent of benefit which we have conferred upon our patient. We cannot tell in what proportion of cases the milder symptoms of nervous disorder would have passed into epilepsy; but that they would have done so in many cases there is much reason to believe.

One of the worst cases of epilepsy from over-work which I have met with is that of a boy, R. M——, who is at present an out-patient at the hospital. The disease commenced about five years ago, when he was 13 years old. Before that time, he was very intelligent, of a rather excitable temperament, with light brown hair, and a fair, clear skin. He was employed as a reader in a printing-office, and he worked at this occupation about ten hours a day, in a hot room. For about a month before the commencement of the epilepsy, he often complained of feeling tired and stupid, and he suffered from headache. At the same time, too, his parents observed that he talked much in his sleep, and occasionally walked about the room in a state of somnambulism. At length he was seized with a very violent fit in the night; and, after a few days, he had a second fit. The fits have frequently recurred from that time. He sometimes has two a week; but occasionally he has been free from fits for two or three weeks at a time. He was soon obliged to resign his employment as a reader; his memory became impaired, and he cannot now read without feeling confused. His parents are healthy; there is no hereditary tendency to nervous disease. Now, it is probable that a week's rest from his work, or a shortening of his day's labour during the month in which the warning symptoms of mischief presented themselves, might have saved this poor boy from the terrible disease under which he continues to suffer.

The great importance of a careful attention to the earlier symptoms of mischief resulting from over-work and anxiety, will be apparent from an analysis of a given number of cases of epilepsy with reference to the nature of the exciting cause. It is better to exclude from consideration cases of renal epilepsy, of infantile convulsions, and of convulsions during the early stage of the acute specific diseases, as, *e. g.*, small-pox. The reason for excluding these cases is, that they are all temporary, except those which result from chronic renal disease, and these are, in most instances, quickly fatal. Excluding these cases, then, I find, on comparing the histories of 37 cases of epilepsy, that in 11 cases the fits occurred after some sudden grief or terror, in 17 cases mental anxiety was the cause, in 5 either bodily disease or intemperance, and in 4 cases the cause could not be ascertained, there being no history of mental shock or anxiety, nor any evidence of bodily disease or of intemperance. It appears, therefore, that a large majority of the cases of permanent, incurable epilepsy, have their origin in mental influences; and that of 28 cases so originating, 17 were produced by the comparatively slow operation of anxiety from various causes. I have before stated, that in two of these cases the influence of intemperance was added to that of mental anxiety, and the following case is an illustration of another combination of causes.

F. H., a female, aged 41, came to the hospital in February, 1851, and gave me the following history of a former illness. About sixteen years ago, a few hours after the birth of her second child, she observed her attendants whispering to each other, and in reply to her inquiry what it meant, they told her that her husband was dying. He had been suddenly seized with a dangerous illness at her mother's house, which was a mile distant. Her husband eventually recovered, but her anxiety was intense for several weeks, and in about a month after her confinement she was suddenly seized with a fit, during which she nearly bit her tongue in two. Her medical attendant bled her, and she had three more fits on the same day. From that time she continued to suffer from the fits, sometimes having four in one day, and never being a week free from them, until the expiration of two years from their commencement, when her medical attendant gave her every night and morning, for a few days, a dose of castor oil and turpentine. The result was, that she brought away about forty round worms, and from that time she has not had a single fit. She had often passed worms of the same kind during the two years preceding the commencement of the epilepsy, but she never had a fit until she was subjected to the intense mental anxiety. After this, however, it appeared, that the worms had perpetuated the disease until they were expelled. Her doctor, she said, told her that *the fits had been* caused partly by fright and partly by the worms. Her story was *a very consistent one, and I have* no doubt as to its substantial accuracy. She came

to the hospital on account of nervousness and restlessness, from which she always suffers when she is anxious, but she has had no return of the epilepsy.

The preceding case is very similar in its general features to one which has been recently published by the late Dr. Graves. The two cases are confirmatory of each other, and both convey an important practical lesson. The case to which I refer was communicated to Dr. Graves by Dr. Harvey. "A young gentleman at a boarding-school lost his brother, who died rather suddenly. This event gave rise to intense grief, which occasioned convulsions, occurring so frequently that the boy was obliged to leave the school. It was soon found that regular epilepsy had been developed, and in a severe form. Various remedies were exhibited, but in vain, for several months, when it was judged expedient to try the effects of oil of turpentine. After it had been used for a few days it unexpectedly acted as a vermifuge, and expelled a tape-worm, from which time the epilepsy never re-appeared." Such is the report of the case, to which Dr. Graves adds the following brief commentary:—"Here, then, we have an instructive example, proving that a source of irritation may exist without producing sympathetic disease, but yet capable of keeping up nervous symptoms when the latter have been caused by other agencies."

It has been before observed, that cases of epilepsy which result from obvious bodily disease, are in most instances curable when the original disease is remediable. It appears, also, that when some bodily disease or irritation of a temporary and removable character has concurred with mental anxiety to produce epilepsy, the prognosis is less unfavourable than when the epilepsy has been occasioned by purely mental influences. The only case of this kind which has come under my own observation, and in which there has been a complete cure, is the one whose history I have just now given. I include that case in the list of seventeen to which I have before referred as resulting from mental anxiety. The remaining sixteen are, so far as I know, uncured. I may remark, however, with reference to this point, that I lost sight of two of the cases quickly after the occurrence of the second fit in each case; so that, although the prognosis was unfavourable, I have no knowledge of the actual results of these cases. In another case, after the first epileptic seizure had been quickly followed by a second fit, there has been no recurrence of the disease for, I believe, more than a year. It is, however, well known that such a patient cannot as yet be considered safe. The history of one case, which is still under my observation, will illustrate this.

H. C.——, aged 51, pianoforte maker, a very intelligent and a very temperate man with a remarkably fine and powerful bodily frame, after suffering much from anxiety consequent upon pecuniary difficulties and excessive labour at his business, had an epileptic fit on the 19th November, 1851. On the 28th December he had two fits of the same kind. After this he had no return of the disease until the 8th February, 1853, so that there was an interval of fourteen months. Then again he had another fit only eight days afterwards—on the 15th of February; and another on the 9th of the present month (April). The irregularity of the intervals between epileptic seizures, and the difficulty of deciding when a patient who has become epileptic under the influence of mental emotion can be considered as actually safe and well, are known to every practitioner. It will frequently be found on inquiry, that when a paroxysm of epilepsy occurs after a long interval there has been some fresh exciting cause, or a repetition of the original cause,—some shock of fear, or grief, or anxiety, or anger, acting through the mind, or some unusual fatigue or attack of sickness disturbing and weakening the body. The practical inference from these facts is obvious. I mean, that a patient who has had one or more epileptic seizures should be most carefully guarded against every influence which, whether acting primarily upon the mind or upon the body, endangers a return or a continuance of the disease.

The history of every *cure* of confirmed epilepsy possesses some degree of interest. I am therefore induced to give a few particulars of one case which I have not included in my list of seventeen arising from mental anxiety.

L. G——, aged 40, a butcher, came to the dispensary on the 20th February, 1852, complaining of nervousness and restlessness,—the result, it appeared, of anxiety occasioned by his having been out of employment. He stated, that, about six years before, he was for three months subject to epileptic fits, which he attributed to excessive eating and drinking. He had been in the habit of eating large large quantities of meat, and he was frequently intoxicated. He sometimes had

as many as three or four fits in one day. He was advised to drink less, and did so. About two months after the commencement of the fits, a large abscess formed near the anus. It was slow in maturating; but at length it was opened; and from that time he has had no fit of convulsion. The abscess occasionally closed and opened again, and it did not finally close for two years. I cannot vouch for the accuracy of this history; but the patient himself appeared quite confident as to the facts. The case affords support to the doctrine of the humoral origin of epilepsy which has been so ably advocated by Dr. Todd.

That epileptic convulsions frequently result from poisonous materials in the blood is as clearly demonstrated as any pathological fact can be. Take, for example, the convulsive attacks which are produced by prussic acid, or by an accumulation of urinary constituents in the blood. In other cases such a cause is in the highest degree probable, as, *e.g.*, when convulsions precede the eruption of small-pox. Again, there are other cases in which it is certain that the blood is abnormal in quality, although it may be impossible to demonstrate the precise nature of the deviation from the normal state; as, for instance, in a case of gluttony and drunkenness, like the one to whose history I just now referred; and, on the other hand, in that numerous class of cases in which continued anxiety and restlessness are associated with a defective appetite for food, and great impairment of the digestive powers. The cases of epilepsy in which the probability of a morbid state of the blood being the essential cause may at the first view appear to be least, are those which are suddenly induced by terror. But, as there is no *à priori* improbability that the character of the blood may be quickly altered by terror, so there are some facts which cannot well be explained, except on the supposition that the blood is in some way changed by violent mental emotion. I allude to the well-known influence of mental emotion upon the various secretions, and particularly upon the secretion of milk, as tested by the sensitive stomach and nervous system of a sucking infant.

The immediate effect of mental anxiety, or grief, or anger, in the nurse upon the infant at the breast is well known, not only by every practitioner, but by every mother. I have repeatedly been told by nursing mothers, that when they are very anxious, their infants invariably have green stools, and suffer from griping. On one occasion I attended an infant which had been in good health until the mother was rendered intensely anxious by her dissipated husband staying out all night; the infant, on the following day, was griped, had green stools, and a fit of convulsions. The man returned; the mother's anxiety subsided, and the child quickly recovered. The most remarkable case of this kind is quoted from a German author, by Dr. Carpenter, in his Principles of Human Physiology:—"A carpenter fell into a quarrel with a soldier billeted in his house, and was set upon by the latter with his drawn sword. The wife of the carpenter at first trembled from fear and terror, and then suddenly threw herself furiously between the combatants, wrested the sword from the soldier's hand, broke it in pieces, and threw it away. During the tumult, some neighbours came in, and separated the men. While in this state of strong excitement, the mother took up her child from the cradle where it lay playing, and in the most perfect health, never having had a moment's illness; she gave it the breast, and, in doing so, sealed its fate. In a few minutes the infant left off sucking, became restless, panted, and sank dead upon its mother's bosom. The physician—who was instantly called in—found the child lying in the cradle, as if asleep, and with its features undisturbed; but all his resources were fruitless—it was irrecoverably gone."

Such an event could hardly, as Dr. Carpenter observes, be regarded as a simple coincidence, if it were not confirmed by numerous other facts of a less striking character, but equally decisive. There can, I think, be little doubt that the effect of mental emotion in modifying the secretions is consequent upon some previous change in the blood itself. This explanation is certainly more consistent with other facts and with analogy than is the supposition that the modified secretion results from some direct and immediate influence transmitted through the nerves to the gland itself or to its secreted products. One of my Dispensary patients, a boy about fourteen years of age, had a fit of epilepsy after the violent excitement of a quarrel with one of his fellows. Now it is certainly not unreasonable to suppose, that this boy's *brain was poisoned* by some noxious modification of his blood, similar to, if not *identical with, that which in like* circumstances leads to the secretion by the mother

of milk so poisonous in its character, that it either quickly kills or convulses or gripes her sucking infant. The green stools, and the griping thus induced, are not distinguishable from the same symptoms occurring as a consequence of the mother eating some kinds of vegetables, such as cabbage. She may or may not be inconvenienced by such diet; but the more delicate stomach of her infant will often prove, by its derangement, that some injurious material has passed through the mother's blood into the secretion of the breast.

There is not wanting even direct chemical evidence of changes in the composition of the secretions effected by the agency of the nervous system. Bernard has shown, that when the medulla oblongata of the rabbit is irritated by the insertion of a fine needle, the urine of the animal quickly becomes saccharine, and that the secretion of sugar continues so long as the irritation of the brain remains. Whatever may be the precise *modus operandi* of the cerebral influence, there can be little doubt that the kidneys only secrete or separate the sugar which is conveyed to them by the blood. They probably have no share in the formation of that material. This is a very striking illustration of a change in the vital chemistry of the blood and of the urine effected by nervous influence. The experiment in question is confirmatory of an opinion entertained by many pathologists, that *diabetes* in the human subject may be induced by over-work and anxiety. I have myself no doubt that this opinion is correct, and within the last few months I have seen two cases of diabetes, the origin of which appears to be clearly traceable to such influences. Another fact which has an important relation to the same subject is the influence which opium frequently has in lessening the quantity and the density of the saccharine urine secreted by diabetic patients. This fact appears, indeed, to be the counterpart of Bernard's experiment. If irritation of the brain of a rabbit by a needle, or of the human brain by mental anxiety, will lead to the secretion of sugar by the kidneys, it is not difficult to believe that the soothing influence of opium may, in some degree, counteract that particular effect of cerebral irritation.

Returning now to the pathology of epilepsy, it seems reasonable to suppose that, however diverse may be the remote causes of the disease, the proximate cause of the epileptic paroxysm is similar in every case. It is certain, that in a large proportion of cases a morbid state of the blood is associated with the disease, and is, in fact, the essential cause of the convulsion. And lastly, while there is some degree of *à priori* probability, that mental emotion causes epilepsy, through a change effected in the composition of the blood, there are some well ascertained facts which afford positive evidence as to this mode of operation. In fact, it is probable that a fit of anger, or of sudden and violent grief, or terror, may generate in the blood a poison which is sometimes as quickly fatal as a large dose of prussic acid, and which is almost identical with that compound in its mode of operation. In discussing a subject of such acknowledged difficulty and obscurity as the pathology of epilepsy, hypothesis must sometimes serve as, at least, a temporary substitute for demonstration. We have only to be careful not to maintain our favourite hypotheses after they have been shown to be inconsistent with actual facts. It scarcely need be added, that, to use hypotheses with caution, and to abandon them when they have served their purpose, or are no longer tenable, is not only a rule of true philosophy, but also a solemn obligation of duty on the part of every one who proposes to found upon hypothetical opinions, rules for the practical guidance of himself or others.

I have before referred to the subject of *delirium*, as being one of the consequences of mental anxiety, under which term I include those mental states which result from grief, over-work, and an over-anxious care for the future, or a dread of ill consequences. In my third lecture I gave the history of a poor man who was rendered delirious, and, at a subsequent period, epileptic, by continued grief and anxiety, consequent on the misconduct of his wife. The delirium in that case is a good example of the kind of delirium which is sometimes occasioned by intense anxiety. This form of delirium rarely, if ever, occurs without being preceded by some warning symptoms. In this respect it resembles the epileptic disease, which is often induced by similar influences. The warning symptoms, too, are of the same kind. The patient's sleep is disturbed by frightful dreams, which he may remember and speak of with dread during his waking hours, or which may be known to occur only by his being heard to talk frequently, or to moan or scream, during his sleep.

When he is talking in this manner during sleep, he will sometimes answer questions as if his faculties were quite alive; but when he awakes, he may have no recollection of what he has said or heard. At other times, he appears while sleeping to be carrying on a conversation with some person whom he imagines to be present. I was once told by a very intelligent woman, whose husband eventually became insane, and died in an asylum, that he was of what she called "a very close disposition," so that he would never willingly speak of his troubles to her or to any one; but, whenever he had been unusually worried, he talked so much in his sleep, that she learned from him then, not only the fact of his being anxious, but also the particular cause of his anxiety.

The transition from a state of sleeping delirium to delirium in the waking condition is sometimes rapid. An intermediate stage appears to be that in which a man starts up in a state of terror and confusion, looking about him and sometimes talking wildly, and recovering complete consciousness only after being frequently spoken to, and roused by being touched or shaken. In some instances, the excitement on first awaking is accompanied by a more or less strong and durable temptation to commit suicide, or to do violence to others; and the patient will afterwards describe these feelings as most distressing and terrible. The symptoms which I have described, if permitted to continue unchecked by treatment, may be quickly followed by an outburst of maniacal delirium, or by an epileptic seizure, and sometimes, as I have seen in two instances, by both these consequences in succession. In no case whose history I have investigated has an outbreak of delirium occurred without being preceded, for a longer or shorter period, by some of the warning symptoms to which I have referred. I have sometimes heard and read of men becoming suddenly delirious or mad without any warning and without any appreciable cause. I have never seen such a case in practice, but I have met with more than one case which, without a careful examination, might have passed for such,—cases in which there was a deep and abiding cause for anxiety, which was never revealed even to the nearest friend or relation until it was made known after it had wrought irreparable mischief in the mind and body of the patient.

One case of this kind presented itself in a clergyman, who was possessed of a powerful mind and body, until he suddenly became insane, and subsequently epileptic, when little more than thirty years of age. His habits were strictly temperate, but he was perhaps over-anxious about his work and the results of his labours. His wife observed that his appearance and manner were changing; he became unusually reserved, and sometimes irritable; in other respects, too, his conduct was strange. He was at a distance from all other members of his family, and his anxious wife had no suspicion either of the real cause of the change which had come over him, or of the further consequences which were threatened. At length he became suddenly and furiously delirious in the middle of the night. The mental disease continued, and became complicated with epilepsy, and, after nearly four years of suffering, he died. Now, the cause of all this mischief was not ascertained until the time for prevention had passed. His income was small, and insufficient for the wants of an increasing family; he was in difficulties on this account, but no one was aware of the fact until the state of his affairs was disclosed after his illness. He was naturally of a reserved, and perhaps I might add, of a proud disposition; and he had concealed his difficulties from his wife, probably from an unwillingness to distress her by a knowledge of them. It scarcely need be added, that his own anxiety was rendered the more intense by this reserve, and by his not seeking that relief which might have been derived from such a free out-speaking of his troubles as would have enabled his family to assist him out of them, or to share them with him.

I could give the details of several cases, of whose history I have an intimate knowledge, in which consequences equally disastrous, though differing in different cases, have resulted from similar causes, and especially from the influence of suppressed grief or anxiety, the cause for which has neither been known nor suspected even by the patient's nearest friends, until it has been brought to light after the onset of some terrible illness,—an attack of mania, or epilepsy, or paralysis.

Now, it is in the highest degree important that our attention should be alive to the true nature of these cases; and for this particular reason—that we may often *be consulted* by an anxious patient before his nervous system has suffered serious *injury. He will be apprehensive* of some bodily disease, and will come to us with a

complaint of some of those symptoms which I described in a former lecture. He feels certain that his heart, or his lungs, or his kidneys, are in a state of incurable disease; and he begs to have our opinion upon their condition. We examine the organs, and we can detect no sign of structural disease, either in them or in any other part. We observe the patient's anxious appearance and manner, and, after inquiring for other sources of disturbance, we may often feel certain that all his discomfort has its origin in some mental influence. If, then, we express this conviction to the patient, in terms which must greatly depend on his circumstances and on the degree of our intimacy with him, we shall probably so far gain his confidence as to obtain from him a confession of trouble and anxiety, of which, perhaps, he had never before spoken to any one. Or, if he hesitate, as perhaps he may, to make a confessor of his physician, we may at least succeed in awakening his attention to the true source and nature of his sufferings, and so induce him to confide in some friend, and to unburden his mind, so far as this can be done, by giving "sorrow words." In this way we may often be instrumental in preventing the occurrence of diseases which, when once they are fully developed, are irremediable by any means which we can command; while on the contrary, an error of diagnosis—and particularly as to the origin of the patient's suffering—may be attended with very disastrous consequences, partly by confirming the patient in his fears as to the state of his bodily organs, and partly by suggesting a plan of treatment the very reverse of beneficial.

Before leaving this part of my subject, I will remark, that, when a patient has once been delirious or insane from the effects of mental anxiety, he is very liable to suffer from restlessness, or to have his sleep disturbed by frightful dreams and visions, if at any time his bodily strength be much reduced by illness or over fatigue, or if he be exposed to any fresh source of mental worry. I have observed this particularly in the case of a poor woman, who has once been in an asylum, and who has several times since complained to me of the symptoms to which I have referred. On each occasion she has been quickly relieved by an opiate taken at bed-time for a few nights. In such cases, it is probable that the mere dread of a return of the disease is often a source of great anxiety. And the same observation is applicable to epileptic patients. One poor man told me, that he always sleeps soundly for a few nights after he has had a fit; and he explained the fact by the feeling of confidence which he has that there is then little reason to fear an immediate recurrence of the fits, which, at other times, he so much dreads, that he cannot sleep with comfort.

Among other consequences of long-continued mental anxiety, I have frequently observed a greater or less degree of that general impairment of all the functions of the mind and of the nervous system to which the term *general paralysis* has been applied. It has appeared to me, that the most frequent and powerful influences concerned in producing this state of body and mind are,—over-work or a deficiency of work, with the anxiety attendant upon it, an insufficient supply of wholesome and nutritious food, and the impure atmosphere of dwellings and workshops. The intemperate use—or, rather, abuse—of alcoholic liquors is by no means an essential cause, but a very powerful one when it exists; for it is an almost constant source of mental anguish, at the same time that it poisons the body and impairs its nutrition. The brief history of one case will serve as an illustration of this form of disease.

J. M——, aged 44, an upholsterer, came to the hospital on the 19th January, 1851. His mental faculties were so much impaired, that he could give no account of himself; but I obtained from his wife the following particulars of his history:—No member of his family had suffered from nervous diseases except his father, who was the owner and commander of an East Indian merchant-vessel, and who became insane, in consequence, as was supposed, of misfortunes and losses during one of his voyages. My patient had married about twenty years before; he had then a good business, and for some time went on very prosperously. About ten years ago he began to drink occasionally to excess, but not so as to interfere with his attention to business. He had always been of a somewhat nervous temperament, but the effect of his occasional intemperance was to make him much more nervous and anxious. About five years ago he lost the custom of a firm which had given him the greater part of his business. He now became very anxious and irritable; he could neither sleep nor eat, and about the same time he had some kind of fit, which was attributed to intemperance. His memory and intellect gradually

failed; he drank less, but his limbs were so tottering and unsteady that he often appeared to be intoxicated when he was quite sober. This had an injurious effect upon his business, and on one occasion a large order was countermanded because he was erroneously supposed to be intoxicated when he received it. He was exceedingly distressed by this occurrence, as well as by the loss of two of his children, which occurred at a more recent period. This series of misfortunes had gradually impaired his health, and when he presented himself at the hospital the expression of his countenance indicated a state of childish imbecility, his memory had entirely left him, his perceptive powers were greatly impaired, he answered questions slowly and imperfectly, his speech was thick, and his gait tottering,—yet with all this his muscles were tolerably firm and well nourished.

I saw him several times after his first visit to the hospital. He remained in much the same condition until the 7th March, when, as I afterwards learnt, he became excited by the expectation to obtain some employment which was promised him, and apparently in consequence of this he was suddenly seized with a fit of convulsions. A medical man who was called in immediately took eight ounces of blood from the arm. After this he gradually became lower, and the convulsions, which were accompanied or preceded by loud screams, returned frequently at intervals of about half an hour. He died on the following day, about twenty-seven hours after the first seizure. I did not hear of his death until it was too late to examine the body.

It is evident that the mental and bodily powers of this poor man were gradually broken down by an accumulation of injurious influences, all more or less connected with each other. It appears that his disposition was originally nervous, and that an occasional habit of intemperance was the first avoidable cause of disaster. He may have been tempted to this habit by his constitutional nervousness; but any temporary relief which he thus obtained was of course followed by an aggravation of the original evil, and so his descent commenced and continued until the final catastrophe. Great as is the physical mischief which is directly occasioned by an abuse of alcoholic drinks, there can scarcely be a question that as in this, so in many similar cases, the mental anguish which the drunkard experiences is not less powerful in its influence upon the nervous system; its action being primarily upon the mind, and secondarily upon the bodily instrument of the mind.

Besides the cases of general paralysis to which I have referred, I have occasionally observed some form of *local palsy* in connexion with intense mental anxiety. I do not now allude to cases of apoplexy and hemiplegia, which, however, I have certainly known to occur under the immediate exciting influence of distress and anxiety; but I refer more particularly to the partial loss of sensation in some of the fingers or other parts of the body—symptoms which are often a source of great discomfort and alarm to a nervous patient. I am ignorant of the proximate cause of these disordered sensations.

I have before stated, that some degree of impairment of vision is frequently complained of. In one case, a nervous man had been rendered intensely anxious by a change of his situation which he had expected to be for the better proving quite the reverse; he became very restless, and quickly lost the sight of the right eye without any outward change in the appearance of the organ; at the same time, too, the sensation of the upper lip on the same side became impaired. Before he came under my care, he had taken mercury without benefit. His health has since improved in other respects; but when I last saw him he had not recovered either his sight or the feeling in the lip.

A girl who was subject to occasional fits of hysteria, suddenly lost the sight of the left eye from the effects of hard work and anxiety. The pupil on the affected side was much dilated. She had a timid, delicate appearance, and a pallid skin. I gave her sulphate of iron three times a day, muriate of morphia at night, and an occasional dose of compound aloes pill. She quickly recovered her sight, and the pupil regained its natural size.

In the case of one woman, at present under my care, who has been much harassed and overworked, and who complains of the usual symptoms, disturbed sleep, etc., one pupil is about twice the size of the other; but she declares that her sight is *good, and equally* so in both eyes.

It is needless to do more than make a passing allusion to the subject of *chorea*

as connected with mental influences. It is well known that scarcely any disease is more intimately connected with the emotions of fear and anxiety. Without doubt some derangements of the bodily organs may concur in the production of chorea, and these must be regarded in conducting the treatment of the disease; but neither the pathology nor the therapeutics of chorea would be complete without due attention to mental and moral influences.

And, lastly, with reference to *hysteria*, it is unnecessary to insist upon the fact, that, notwithstanding the etymology of the disease, it is by no means limited to the female sex. There is not one of its characteristic symptoms which may not be fully developed in the male. It is a less frequent disease among men, for the reason that the feeble constitution and the excitable nervous system which predispose to the hysterical paroxysm are less common in men than in women. The *globus* in the throat is the form of hysterical symptom which I have observed more frequently than any other in anxious patients, both men and women. It is always a distressing symptom, and it often alarms the patient greatly. The sensation is usually excited by some sudden emotion, and it may occur at any period of the day or night. In several cases, especially in men, it has been complained of only at night, and, in these instances, it has appeared to be connected with the unpleasant dreams by which the patient was nightly disturbed. The dreams and the hysterical globus have been cured by the same means.

One of the most remarkable cases of the kind was that of a man nearly 60 years of age, who came to the dispensary, and assured me, that, for the period of a year, he had scarcely passed a night without being disturbed by a frightful sense of suffocation, for the relief of which his son and daughter assisted him to the open window. He had no cough, nor any symptom of disease within the chest. His countenance indicated great anxiety, and he spoke of having been much troubled by circumstances, the nature of which he did not communicate. I ordered him to take five grains of the compound soap pill each night at bed-time. He came again at the end of a week, and told me, that, since taking the pills, he had slept well, and had not once been disturbed by the choking sensation which had so long distressed him. From that time I saw him no more; I therefore conclude that he had no return of the complaint. I have seen many cases similar, though less striking than this,—similar both as regards symptoms and the results of treatment. It sometimes appears that local irritation of the throat excites the sensation of *globus* in those who are predisposed to it. When a very nervous woman gets a common sore throat, her distress and sense of suffocation are often quite out of proportion to the local irritation or swelling. One poor woman, who was very anxious, and much overworked, had a slight choking fit while swallowing some food, and afterwards she felt convinced that some substance had lodged in her throat. She went to one of the hospitals, where the house-surgeon passed a probang, but this rather increased the discomfort. She afterwards came to the dispensary, and told me her history. The mucous membrane of the fauces and pharynx was congested, but her intensely anxious face and nervous manner, and her description of the *rising* in her throat, were the most significant facts. It was not until after many days, and then very gradually, and with occasional relapses, that she escaped from the painful conviction that there was some solid mass actually sticking in her throat.—*Med. Times and Gazette, Sept.* 24, 1853, *p.* 315.

18.—*Case of Epileptic Convulsions cured by the Internal Administration of Chloroform.* By HENRY BOWE, Esq.—[The patient in this case, now about one year and seven months old, had his first epileptic seizure when he was five months old. In spite of all remedies the fits gradually increased in frequency until his face assumed an idiotic expression. On the 7th of April he first came under the care of Mr. Bowe, who prescribed various remedies, but up to the 20th of April,]

The fits increased rapidly, as many as eighteen occurred in one day, following each other in quick succession. In the short intervals between them he lay in a semi-comatose condition; for three days he took no nourishment whatever, and was evidently fast sinking from exhaustion. Seeing that everything done had failed to give even the slightest relief, I determined to give chloroform a trial.

I commenced giving it internally, in five-minim doses, suspended in mucilage, directing the mother, after every fit, to give a dose of the medicine. On visiting the child the following morning, the 21st, I found that he had slept almost continuously since taking the first dose, and that there had not been any fit. He was quite sensible when awakened to take his food or medicine, of which three doses had been given in the course of the previous day.

I directed the mother to continue the medicine three times daily, and frequently to give small quantities of beef-tea and arrowroot. From this date the child improved rapidly up to May 6th, on which day he was very fretful, and evidently suffering from the irritation caused by the teeth, which had nearly penetrated the gums. The dose of chloroform was increased to seven minims, and a purgative powder to be given twice a week, after which he was much relieved. I ceased to attend him on May 20th. He was then perfectly well, never having had a return of the fits since the first dose of chloroform was administered.

July 18th.—I have this day seen the child; he continues in perfect health; has cut three teeth, and has not had any return of fits.

I am not aware that chloroform has hitherto been given internally in similar cases to the present. Of course, very little can be argued from a solitary case; but perhaps experience will prove that in convulsive affections, especially those of children, we have in chloroform a powerful remedial agent.—*Med. Times and Gazette, Sept. 24, 1853, p. 323.*

19.—TWO CASES OF TRACHEOTOMY FOR THE RELIEF OF EPILEPSY.

By Dr. John Charles Bucknill.

[In the first case, the patient, a single woman, aged 22, was admitted into the Devon Asylum on the 21st of April, 1852. She was almost an idiot, and subject to severe epileptic fits; indeed, during their presence the degree of maniacal violence accompanying them could not be surpassed. Under these circumstances it was resolved to try the effect of tracheotomy.]

The operation was performed on the 2nd of May last. The patient was put under the influence of chloroform. The opening into the trachea was made below the isthmus of the thyroid body, which was hypertrophied; the trachea lay at a great distance from the surface, in consequence of an hypertrophied condition of the sterno-mastoid muscles—a condition which I have frequently observed in those long subject to epilepsy. The incisions were made in a vertical direction. On recovering from the influence of the chloroform, the patient became so violent, that it was found to be impossible to retain the canula in the wound. After many ineffectual attempts to do so, and anxious not to lose the benefit of the operation on this account, I removed a semicircular portion of the trachea on each side of the incision, with the intention of establishing a fistulous communication without the aid of a canula. In the night she had a severe fit, the wound being plugged up with lint to prevent oozing. On the 6th she had two slight fits, not becoming as usual black in the face or frothing at the mouth during recovery. Since her admission *she has not had a slight fit before.* On the 7th and 8th she had three severe fits, the opening into the trachea having become obstructed with exudation. It was cleaned, and soon afterwards she had a slight fit. From this time up to the present date great difficulty has been experienced in keeping the fistulous communication open. The size of the sterno-mastoid muscles and of the thyroid body make the fistula a long one. The incisions having been made parallel to the muscular fibres and across the skin folds, the tendency to close has been great. This tendency, after the failure of milder measures, has only been obviated by the use of potassa fusa. This escharotic has been used three times. During the time that the fistula has been closed by the slough thus produced, the patient has had two severe fits; after the fistula has become open again, the fits have been slight. Since the operation has been performed the temper and conduct of the patient has undergone a great and remarkable change for the better. She is at times sullen, and at other times perverse; but her behaviour *resembles the* haughtiness of a self-willed child rather than the extreme fury *of epileptic mania, which had* for so long a time been its characteristic. Her gene-

ral health has improved. Up to the present time I think it a moderate and impartial estimate to say that since the operation her fits have declined fifty per cent. in frequency, and seventy-five per cent. in severity.

[The second case, a single woman aged 35, was admitted Feb. 2, 1848. Had been subject to epileptic attacks for seven years. Lately the fits had increased in number; they did not come on periodically, but several occurred about the same time. The character of the fits was severe.]

On the 20th of June, the operation of tracheotomy was performed. Chloroform produced so much irregularity in the respiratory movements, that it was deemed advisable to allow its effects to pass off before the operation was proceeded with. The incisions were made transversely, and a large canula was placed in the trachea, just below the cricoid cartilage. Subsequently to the operation the patient has had seven fits; their character is entirely changed; there is not the slightest lividity of the face or frothing at the mouth. Each fit is recognised by a convulsive movement of the eyes, and by slight twitchings of the arms and facial muscles. The state of unconsciousness continues about half a minute, leaving behind a very moderate degree of stupor, which passes off in half an hour. In language current in the wards, "the fits flutter off." She is not only tranquil, but is cheerful and thankful for her improvement. The canula is kept in its place without difficulty, and the opening is free enough to permit the whole of the respired air being passed through it at the will of the patient.

On these cases I shall take leave to make a few remarks, surgical and medical. The first was certainly undertaken with little hope of a successful result. But under the aggravated circumstances presented by it the operation appeared to be a justifiable *pis aller*. It has certainly ameliorated the distressing condition of the patient in a far greater degree than a cautious prognosis would have permitted one to hope for. The improvement of the patient's temper is a noteworthy occurrence; it is a change of no slight or doubtful nature, but obvious and decided. A fit has several times occurred, when the deep and narrow fistula has become almost closed by fibrinous exudation, or by a slough caused by the use of an escharotic. At such times the fits have their old character of apnœa and coma, and the patient has for some hours afterwards become violent. When the fistula became free the symptoms were ameliorated. These facts afford proof of the relation in which the phenomena stand to each other—a proof arrived at by the method of agreement and that of difference, and therefore logically complete. The surgery of this case, however, must be considered imperfect and unsatisfactory. It was an error to make the incisions below the thyroid body, and in a line with the axis of the trachea. This operation may be the best for the removal of foreign substances from the air passages when the opening is intended to be speedily closed.

In operations for diseased larynx it may be necessary to make the incisions low in order to remove them as far as possible from the seat of the disease; but for the present purpose the low operation is decidedly ineligible, on account of the great proneness which such wounds have to close.

Liston, writing on tracheotomy, states—"The union and cicatrisation of such longitudinal wounds are soon accomplished; they close permanently in a few days, even after having been open for many weeks with a foreign substance interposed between their edges. The same obstacles do not interfere as in transverse wounds; on the contrary, every circumstance is in favour of rapid union."—(Elements of Surgery, p. 451.)

The operation for epilepsy supposes the necessity for the wound remaining permanently open, inasmuch as the cure of the disease is not attempted or expected; and the remission of its graver symptoms can only continue so long as the artificial opening remains free. Those incisions therefore will best answer this purpose which will remain open with the least trouble and the greatest certainty.

Another reason for preferring the higher operation is the depth at which the lower part of the trachea lies from the surface. This depth is always enough to increase the difficulties, but in epileptic patients the trachea often lies much deeper than usual, in consequence of the hypertrophied condition of the muscles in those parts. Influenced by these considerations, in the second case I made the incisions above the thyroid body and in a transverse direction, dividing the muscular fibres freely, and laying bare the trachea just below the cricoid cartilage. The main incision into the trachea

was also made transversely, but from the middle of the lower edge a short downward incision was added. The result has been satisfactory. In the first case an imperfect supplemental inlet only was effected, and the respiration was but partially relieved during a fit. In the second case a full and sufficient passage was afforded for all the air required, and during the fits, the respiration is not impeded in the slightest degree.

Notwithstanding the relief afforded to both the above cases, and to several others which have been recorded, it is highly probable that in many cases of severe epilepsy the operation would fail from causes which have not hitherto been sufficiently examined. Where the symptoms of severe epilepsy depend upon spasmodic closure of the laryngeal opening, tracheotomy will probably afford all the relief which has been promised. If, however, severe epilepsy may occur independently of what is now called laryngismus, in such cases the operation will be resorted to in vain.—*Lancet, Aug.* 13, 1853, *p.* 137.

20.—*On the Treatment of Epilepsy.*—[After reviewing the several modes of treating this disease recommended by a great many authorities, the editor of the 'Association Medical Journal' thus sums up the existing knowledge regarding its pathology and treatment:]

1. Epilepsy is an assemblage of symptoms dependent on disturbance of the nervous centres, and which may arise from different causes; some of which operate directly, as injuries, or morbid growths; others through the blood, in the form of hereditary or acquired toxæmia; and others again by reflex irritation. Of these, we believe toxæmia to be the most frequent cause of the disease. The relation to epilepsy of osteophytic or other morbid growths pressing on or irritating the brain, remains to be determined. In some cases they may be the direct cause of the epileptic fits; but they may also, with at least equal probability, be regarded as originally arising from the same blood-disease as that on which the epilepsy depends. After their development, they will doubtless render the case incurable, by renewing the irritation on the occurrence of the slightest cerebral congestion.

2. It is absurd to expect a remedy for epilepsy, which shall in all cases cure it. Acting on the view of its being a blood-disease, we may perhaps hope one day to become acquainted with a medicine which shall be as efficacious in its treatment as cod-liver oil is in the treatment of phthisis. In the mean time, attention to hygienic rules, the proper maintenance of the secretions, and the mineral tonics, especially the salts of zinc, with such occasional adjuncts as may be required by the circumstances of the case, must form our chief remedies.—*Association Medical Journal, April* 1, 1853, *p.* 283.

21.—*On the Use of Chloroform in a case of Infantile Convulsions.* By. W. C. Williamson, Esq., Professor of Anatomy and Physiology in Owen's College, Manchester.—[The little patient in this case was about six weeks old. It had been brought up on artificial food. On the 29th April the convulsions first commenced, and they gradually increased in intensity, in spite of all remedies calculated to relieve the irritations upon which they might be dependent.]

Under these circumstances, since the child was rapidly sinking, Dr. Bardsley and myself determined to have recourse to chloroform. I commenced the use of it at nine o'clock on the evening of Friday, May 8th. The child was then in a violent convulsion, which had continued for several hours. I folded a thin muslin handkerchief into a hollow funnel-shaped form, and after dropping half a drachm of chloroform into the hollow cavity, I inverted it over the nose of the convulsed infant, holding it about an inch from the face, so as to allow a free current of air to reach the respiratory organs. In about two minutes the convulsion gave way, and the child went to sleep. The effect of the chloroform passed off in a few minutes, when it was again applied, and thus the child was kept quiet for some hours.

I soon found that by slightly releasing the infant from the influence of the chloroform, but without allowing the convulsions to regain their power, it was possible to

give a supply of food, which was swallowed eagerly and with great facility. This alone was an important advantage gained from the chloroform, since previous to its administration the child was obviously sinking from inanition.

For some hours I administered the chloroform myself, but afterwards entrusted it to an intelligent nurse, who was instructed to apply it the moment the child exhibited any movements indicating returning consciousness. This treatment was continued without a moment's interruption, until nine o'clock on the subsequent Monday, when the use of the chloroform was suspended, the infant having been under its influence sixty hours, sixteen ounces having been used. Its appearance was now decidedly improved; its flesh more firm, and the sunken eye and livid countenance were exchanged for a much more healthy aspect. The convulsions exhibited no disposition to return, and up to the present period (May 30) the infant has enjoyed perfect health.

In this case I have not the slightest doubt that the chloroform was instrumental in saving the patient's life; I can scarcely conceive recovery to have been possible without its aid. No injurious effects, however trivial, appeared to accrue from its use, and I am satisfied that, if necessary, we could have employed it for a much longer period without evil consequences.

It is of course important to ascertain to what class of convulsive attacks this new remedy is applicable. In the present instance, though the condition of the patient was masked at its commencement, in its latter stages the disease assumed the adynamic type. It is obviously in such cases that we should be most likely to obtain benefit from the combination of the stimulating and sedative properties of the anæsthetic agent. It is a curious circumstance that such a modified use of it as allowed of the action of the muscles of deglutition, was nevertheless sufficient to control the convulsions.—*Lancet, June* 11, 1853, *p.* 535.

22.—*Compound Anodyne Application in Sciatic Neuralgia.*—At the meeting of the Academy of Sciences in Paris, on April 16th, M. POGGIALE read a memoir on the treatment of sciatic neuralgia. He proposed the following formula:—

℞.	Extract of belladonna - - - -	5. parts.
	Hydrochlorate of morphia - - -	0.4
	Ointment - - - - - -	16.
	Lard macerated with stramonium leaves - -	0.16
	Essence of lavender - - - -	a few drops.

The ointment is applied by gentle and prolonged friction. The author related ten cases in which sciatica had been cured; all having been remarkable for the previous duration of the disease, the failure of the treatment previously employed, and the rapidity and persistence of recovery after the use of the application described above.

M. Poggiale believes that pain is a more important element in disease than is generally believed. In his opinion, it may be a powerful cause of disease, and may produce most severe symptoms. In many affections, pain is a predominant symptom, if indeed it does not constitute the disease; and on arresting it, the entire disease disappears. He also thought that it is too much the custom in the present day to prescribe simple formulæ. A combination of substances of similar properties often produces better effects than the employment of each alone in succession.—*Association Med. Journal, Sept.* 2, 1853, *p.* 779.

23.—CASE OF TRAUMATIC TETANUS SUCCESSFULLY TREATED BY CHLOROFORM.

By DR. FREDERICK J. LOWES, Gosport.

[On February 21st, Dr. Lowes amputated the arm of a man who had, by accident, received the charge of a gun into the upper arm. The humerus was severely fractured, but the brachial artery was uninjured. On the fifth day after the operation the suppuration had nearly ceased, and the wound was healing rapidly. During the day, however, he was seized with violent trembling, and the next day with pain in the back, like rheumatism. Two days after, he complained of difficulty in opening

the jaws. A strong purgative was given, followed by a draught containing 3j. of tincture of opium. Dr. Lowes proceeds :]

At one o'clock P.M. a message was brought me that he was dying. I found that he had had several attacks of violent spasm, attended by a feeling of suffocation ; viscid mucus was issuing from his mouth, and he was bathed in cold perspiration. I immediately removed the dressings, and applied a bread-and-water poultice to the stump, and then placed him under the influence of chloroform, likewise rubbing it down the spine, on the epigastrium, throat, and over the regions of the temporal and masseter muscles. This relieved him from the violence of the spasm, and he was able to open his mouth to the extent of nearly half an inch, when I administered half a drachm of the tincture of Indian hemp, made after the formula of Dr. O'Shaughnessy. The stomach instantly rejected this, when I gave him one drachm of Battley's solution of opium, in some sherry wine, and, an hour afterwards, once more placed him under the influence of chloroform, and ordered him an enema of castor-oil and turpentine, desiring that his legs and abdomen might be rubbed with turpentine. On my visit in the evening, I found the bowels had been relieved ; but he had been unable to take any food, and the spasms had been very severe, causing him frequently to bite his tongue, which was not, however, much coated. I once more placed him under the influence of chloroform, and applied it externally as before ; and once more tried the Indian hemp, which his stomach rejected again directly. I therefore gave him half a drachm of liq. opii in wine, and left two doses to be administered during the night, at intervals of four hours. The following day (March 17th) I saw him at seven A.M. Had had a restless night, dozing at times ; but the spasms followed in such quick succession as to be constantly waking him. I placed him again under the influence of chloroform, and ordered him an embrocation, consisting of chloroform, extract of belladonna, and soap liniment, to be rubbed on the spine, throat, chest, and abdomen, several times a day, and repeat the liq. opii. Two P.M.—Has had several spasms, dozing in the intervals. Put him under the influence of chloroform, after which the jaws were separated about half an inch. Gave him beef-tea with a spoon. Ordered him an enema, composed of beef-tea, with castor-oil and turpentine, and the following pills :—

℞. Camph. gr. xij. ; morph. acet., gr. ij. ; quinæ disulph., gr. viij. ; ext. hyoscyam., q. s. Ft. pil. viij.

Sumat unam tertiâ horâ quâque.

Nine P.M.—Spasms rather less ; placed him again under the influence of chloroform ; much difficulty in swallowing the beef-tea ; bowels slightly open ; gave him some wine.

[As a purgative 1 drop of croton oil and 10 grains of ext. coloc. co. were given. The patient continued to improve until the 29th March, a painful stiffness of the muscles only remaining. Dr. Lowes concludes :]

In this case I believe the chloroform to have been the most effective agent, as the spasmodic action was always lessened after its application. The Indian hemp did not appear to succeed, as it always induced vomiting. The patient derived much benefit from the croton-oil purging, and the nervous irritability seemed to be allayed by the combination of the morphia, quinine, and camphor. His pulse was not much affected by the disease, excepting during the paroxysms, and he had no difficulty in voiding his urine. The ligature came away on the twenty-third day. I found it necessary frequently to visit this case, to see that my orders were carried out ; and my best thanks are due to Dr. M'Kechnie, to whom I am much indebted for his able assistance. I was induced principally to use the chloroform, owing to a case of chorea of three months' standing, which came under my care about a twelvemonth since, being cured by it. The patient was a boy, about ten years of age, who was never at rest, day or night, from the constant twitching of his muscles, and, at last, lost all power in the lower extremities, so that I feared some lesion of the cerebro-spinal system had taken place ; and, as all the usual remedies had been tried unsuccessfully, I determined to use chloroform ; when, after applying it about three or four times a week to the spine and epigastrium for about a fortnight, the boy got perfectly well, and has had no relapse.—*Med. Times and Gazette, May* 21, 1853, *p.* 517.

24.—*Additional Experiments on the Excitability of Paralysed and Healthy Limbs by the Galvanic Current.* By Dr. R. B. Todd, F.R.S., &c.—In the summer of 1847, Dr. Todd submitted to the Society the results of experiments tried with the view of testing the accuracy of Dr. M. Hall's dogma, that limbs paralysed by lesion of the brain became more excitable than the healthy ones by the galvanic current, in consequence of an increased irritability of the paralysed muscles. The present communication comprises the results of experiments to determine the difference on the influence of the current according to its direction, and also to ascertain whether any real difference of physiological effect exists when the galvanic trough, or the magneto-electric or electro-dynamic machine, is used. Thirteen healthy individuals were subjected to experiment, and with the following results:—

1st. That the obvious physiological effect was produced only on completing, or on interrupting, the galvanic circuit.

2nd. That more vigorous contractions were excited on the completion than on the interruption of the circuit.

3rd. That the completion or the interruption of the direct current produced more vigorous contractions than the completion or interruption of the inverse current.

These experiments were made with a Cruickshank's battery, charged with very dilute sulphuric acid. The magneto-electric rotation instrument and the coil machine (electro-dynamic) were afterwards used, and it was found that the same effects precisely were produced, and the same variation in the intensity of the contractions according as the current was direct or inverse. Fifteen cases of hemiplegic paralysis, caused by lesion of the brain, are afterwards detailed. The results of the galvanic experiments on these cases were as follow:—

1st. That of the fifteen cases, in only three was there any approach to a greater excitability of the paralysed than of the sound limb, and that in two of these it was manifested only under the influence of the inverse current.

2nd. That in three of the cases both the coil machine and the battery were used, and precisely with the same results; and that, in one of the cases, the coil machine alone was used, and with a result which corresponded with those obtained in similar cases by the galvanic battery.

3rd. That in each of the three cases in which a greater excitability existed in the paralytic limbs, the paralysing lesion in the brain was more or less of an irritative kind. In one case, the irritation was probably connected with an incipient process of cicatrisation.

4th. That in many of the experiments all degrees of galvanic power were used, and with no other difference than that of degree; the amount of physiological effect being exactly proportionate to the power of the galvanic stimulus.—*Med. Times and Gazette, July* 30, 1853, *p.* 124.

25.—*Delirium Tremens produced by Abstinence from Tobacco.*—Delirium tremens and its twin sister, traumatic delirium, are now so well understood to be dependent on asthenic irritability of the nervous system, that but one opinion prevails as to the principles which should regulate their treatment. Sudden disuse of accustomed stimulants is always to be deprecated, and, in the event of a patient of known intemperate habits coming under surgical treatment, especially on account of an accident, care should always be taken that he is not deprived of his wonted allowance of alcohol. There is, however, another very potent drug in but too common use among the lower orders, the probable effects of suddenly relinquishing which, have, we suspect, been too little considered, and respecting which the event of a case lately under the care of Mr. Curling, appears to offer a valuable hint to the practical surgeon. A withered old woman, a gin drinker and an habitual smoker, was admitted on account of a severe burn. Stimulants were from the first freely allowed her, and opiates administered, but in spite of them, she continued extremely restless, wandering at times, and quite unable to sleep. Her manner and aspect, indeed, much resembled those of delirium tremens. At this juncture, several days after admission, Mr. Curling ordered that she should be permitted to smoke. The salutary influence of the measure was soon apparent,—the woman became quiet and tranquil, and on the next night slept fairly. All tendency to delirium disappeared,

and she afterwards progressed steadily to recovery. Prevention is, however, better than cure, and we cannot leave this subject without dropping a hint that, in relation to the prevention of such diseases as those under consideration, the predisposing causes of which are well known and removable, the conservators of the public health have very important duties to perform.—*Med. Times and Gazette, Aug.* 13, 1853, *p.* 167.

26.—*Chloroform in Delirium Tremens.* By Dr. Pratt.—Dr. Pratt has administered chloroform internally, with success, in two cases of delirium tremens. The first patient took four grammes in water, repeated every four hours; the second patient took a tea-spoonful of chloroform in water, followed, in an hour, by eight grammes of spirit, æther, sulph. co., tinct. valerianæ, and four grammes of chloroform. A quarter of an hour afterwards the patient fell asleep, and awoke in three hours and a half with his reason. Small doses of chloroform were subsequently administered from time to time.—*Med. Times and Gazette, Aug.* 6, 1853, *p.* 148.

27.—CASE OF SEVERE CHOREA.

By Dr. Barclay, Medical Registrar to St. George's Hospital, &c.

[In this very violent case, it was for some time doubtful whether a fatal termination would not result. The remedies which seemed to incline the issue favourably, were the administration of chloroform and quinine suppositories. If chloroform, in cases of violent mental excitement, as mania, delirium tremens, chorea, &c., does not produce natural sleep after its effect passes off, the probability is that much more harm will result from its administration than good. It may, however, from its transient effect, be administered in some cases of cerebral excitement where the too persistent narcotics, as opium or morphia, cannot be given. The quinine was resorted to, to sustain the system, and restore its exhausted energies as a tonic. With these preliminary remarks, we proceed to relate the case.]

Susan H——, aged 16, was admitted into St. George's Hospital, under the care of Dr. Wilson, on February 23, 1853. She had been in service, and had been much worried by illness in the house, and overwork. No other cause was known for the occurrence of the symptoms of chorea, which had been gradually supervening during a fortnight or three weeks before her admission. She had had no rheumatism, and the heart was healthy. When received into the hospital, the spasmodic movements were not by any means violent, nor very constant; but there was great distortion of features, especially when she attempted to speak. She was ordered a strong purgative, and then directed to have six minims of Fowler's solution in pimento water, three times a day. The bowels were rather loaded, and much inclined to be costive, and the purgative was repeated on two or three occasions. She continued taking the arsenical solution until the 11th of March, and seemed, under its influence, to be gradually becoming quieter and steadier. She was rather out of sorts that day, and the arsenic was left off for a day or two.

The spasmodic movements now began to be more frequent and severe, and she was obliged to lie in bed. The sesquioxide of iron was given in doses of two scruples three times a day without benefit. Her nights became disturbed, and she used to scream out a good deal during the day. Seclusion had rather a calming effect upon her; and the bed was screened off from the rest of the ward, during which she used to have occasional short slumbers, but, for the most part, she was very restless; the expression of her face was rather wild, and the spasmodic movements constant and severe.

On the 17th, the bowels having been well purged, she was ordered to have a third of a grain of tartar emetic every three hours, and half a grain of acetate of morphia at night. This produced no sickness, and seemed partially to calm her; it was continued a second day, at intervals of four hours. She had had no sleep that night, and was evidently no better; without being very violently tossed about, there was *excessive restlessness* and desire of movement; her face was much distorted, and

the expression wild, and almost maniacal; and, as she sat upon her bed, with her legs drawn up under her, and her hair in wild confusion about her face, she looked much more like a proper inmate for Bedlam, than a person suffering simply from chorea, and the more so, because of her constant cries; but the nurse satisfied herself that she was free from delirium, and perfectly conscious on all occasions.

She had now passed the catamenial period, with no return of the menstrual flux. Her nights were sleepless, and a quarter of a grain of morphia was given every three hours to six times, but without benefit. She seemed to be gradually becoming exhausted by the constant jactitation and want of sleep. Wine had been given; yet the tongue was becoming dry and brown, the lips covered with sordes, and the pulse quick and feeble. Her aspect was distressed, and she was tossed about very violently by the spasmodic movements of the disorder.

On the 21st she was directed to inhale chloroform, and to have a suppository, with two grains of opium at once, and a draught of four grains of camphor, and some chloric ether every two hours. The first inhalation quieted her, but she awoke almost immediately after the first effects had passed off; it was not repeated till night, and, in the mean time, eight grains of quinine in suppository were ordered every hour for six times. She had some sleep after the second inhalation, and it was repeated the following forenoon. She was decidedly quieter, and the draughts and the suppositories, which had not been all given with perfect exactness, although very frequently during the night, were continued at intervals of four hours. The chloroform inhalation was again repeated on the evening of the 22nd. She slept pretty well after it through the night, and fell asleep naturally next morning, waking up to have her dinner, and almost immediately going to sleep again, and continuing to doze all day. From this time she continued to improve rapidly. She was still a little odd-looking in the face, and restless jactitations lasted for some time; but she gradually became steadier. On the 4th April she was ordered Griffith's mixture, and on the 15th was discharged recovered.—*Med. Times and Gazette, May* 28, 1853, *p.* 548.

DISEASES OF THE ORGANS OF CIRCULATION.

28.—ON SOME OF THE PRINCIPAL EFFECTS RESULTING FROM THE DETACHMENT OF FIBRINOUS DEPOSITS FROM THE INTERIOR OF THE HEART AND THEIR MIXTURE WITH THE CIRCULATING BLOOD.

By Dr. W. Senhouse Kirkes.
Communicated by Dr. George Burrows, F.R.S.

[That the blood may, in certain cases, deposit its fibrinous constituent upon some portions of the circulatory apparatus, seems now to be an established truth. These may either be the globular excrescences of Laennec, or the many varieties of warty growths adhering to the valves. That these masses may be dislodged during life is easily proved by a very slight force being, in many instances, necessary for their removal after death. Such being the case, it is also easily understood that the first vessel too narrow for their transmission must oppose an obstacle to their further progress; if from the left side of the heart, they will be arrested in any of the systemtic ramifications, especially in those organs receiving a large supply of blood, as the brain, spleen, and kidneys; if from the right, they must necessarily be arrested by the minuter vessels of the lungs. First, on the effects of such an accident in the systemic circulation. The three following cases will show that softening of the brain was consequent on the blocking up of the main cerebral arteries by fibrinous masses, apparently derived from the left side of the heart:]

Case 1.—Margaret Shaw, aged 34, a pale weakly-looking woman; admitted into St. Bartholomew's Hospital, under Dr. Roupell, about the middle of July, 1850, on account of pains in her lower limbs, and general debility. A loud systolic murmur was heard all over the cardiac region. No material change ensued in her condition until August 7th, when, while sitting up in bed eating her dinner, she suddenly fell back as if fainting, vomited a little, and when attended to was found speechless, though not unconscious, and partially hemiplegic on the left side. The hemiplegia

increased, involving the left side of the face as well as the limbs, and gradually became complete in regard to motion, while sensation seemed to remain unimpaired. She continued speechless and hemiplegic, but without loss of consciousness, for five days, when she quietly died.

On examining the body, six hours after death, the skull and dura mater were found natural; but the small vessels of the pia mater were much congested, the congestion amounting, in some places, almost to ecchymoses. The right corpus striatum was softened to an extreme degree, being reduced to a complete pulp of a dirty grayish-white tint, and without any remains of its characteristic striated structure. The corresponding optic thalamus was healthy; but a condition of pale softening, similar to that affecting the corpus striatum, existed also to a considerable extent in the posterior lobe of the right cerebral hemisphere. The rest of the cerebral substance of this hemisphere was softer than natural, and appeared to contain less blood than ordinary. All other parts of the brain were healthy. The right middle cerebral artery just at its commencement was plugged up by a small nodule of firm, whitish, fibrinous-looking substance, which, although not adherent to the walls of the vessel, must have rendered its canal almost, if not quite, impervious. With the exception of a speck or two of yellow deposit in their coats, the rest of the vessels at the base of the brain were healthy and filled with dark blood.

The heart was enlarged; on its exterior were several broad white patches of false membrane. The right cavities and left auricle contained recent separated coagula; the fibrin firm and whitish. The right valves were healthy; so also were the aortic, with the exception of slight increase of thickness. The mitral valve was much diseased, the auricular surface of its large cusp being beset with large warty excrescences of adherent blood-stained fibrin. There were a few scattered deposits in the coats of the aorta. The right common iliac artery, about an inch above the origin of its internal branch, was blocked up by a firm, pale, laminated coagulum, which extended into the internal iliac, and for about a quarter of an inch down the external iliac, where it terminated rather abruptly. The lower portion of the coagulum was colourless, and softer and more crumbling than the upper, which was also more blood-stained and laminated. There was no adhesion of the coagulum to the walls of the vessels. No similar clot existed in the iliac vessels on the opposite side. The pleuræ were adherent in places; the lungs œdematous, and in places solidified by compact grayish-white masses, such as might result from uncured pneumonia. The pulmonary vessels were free from old coagula.

The liver and intestinal canal were healthy. The spleen was large, pale, and soft. One large portion, about a fourth of the organ, was converted into a mass of firm, yellowish-white, cheesy substance. The kidneys were pale, rough, and granular. Within the cortex of the right were several large masses of yellow deposit, surrounded by patches of redness. The portions of medullary structure passing to these deposits were compact, dryish, and yellow.

In the case just narrated, death evidently resulted from softening of a large portion of the right side of the brain; and the cause of this softening appeared to be an imperfect supply of blood, consequent on the middle cerebral artery of the same side being obstructed by a plug of fibrin within its canal. I am not aware that there has yet been recorded a case in which fatal softening of the brain resulted from a cause like this; therefore in itself this case is one of value. That the existence of the fibrinous coagulum within the cerebral artery was the real cause of the changes in the brain, can, I think, scarcely admit of question. The sufficiency of such an obstruction to produce the effects ascribed to it is fully established by the many instances in which disturbance, or complete arrest of function in a part, with subsequent atrophy or disorganization of its tissue, results from any circumstance which materially impedes or entirely cuts off its supply of blood. Examples of this kind at once suggest themselves;—such as the weakened and subsequently degenerated heart, when the coronary vessels are diseased by deposits in their coats; the feebleness, atrophy, or even gangrene, ensuing in the whole or part of a limb whose arteries are similarly diseased, or obstructed from any other cause; also the impairment of cerebral function and subsequent softening of the tissue of the brain when the cerebral vessels are much diseased. But perhaps the best illustration bearing on the case in question is afforded by the results sometimes observed after *ligature of one of the* common carotid arteries. Such an operation is not un-

frequently followed, almost immediately, by giddiness, loss of speech, and unconsciousness, which may pass on even to fatal coma. When not thus speedily fatal, hemiplegia of the side opposite to that of the ligatured artery may ensue, and death may occur from that cause at a more remote period, while examination after death discloses a greater or less amount of disorganization, amounting sometimes to gangrene, in the cerebral substance, especially on that side on which the operation was performed.

[In this case the fibrinous material had evidently been arrested at the angle whence the middle cerebral proceeds from the carotid. In the second case related, the results were so similar that it is scarcely necessary to relate the case. In the third case, the patient, William Purdy, aged 24, was admitted into St. Bartholomew's Hospital on January 22, 1852. His legs and feet were much swollen, and a harsh systolic murmur was heard at the apex of the heart, fading towards the base, where the second sound was clear. He had previously had rheumatic pain in the joints. About a fortnight after the cardiac symptoms had manifested themselves, he was seized with an apoplectic attack, and on admission into the hospital, there was loss of motion over the whole of the left side, though sensation was not much impaired. Nutritious diet and wine were administered, under which he seemed to rally for a short time, but he died ten days afterwards.]

An examination of the body was made twenty-eight hours after death. The emaciation was considerable. The lower limbs remained œdematous, especially the left, the foot of which was of a dark, livid colour. The tissues generally were very pale, especially about the scalp. The skull was pale and light. The membranes of the brain were healthy, but pale, while there was a considerable excess of clear fluid in the cavity of the arachnoid and the tissue of the pia mater. The vessels of the pia mater were unusually deficient in blood, almost empty. The substance of the brain was remarkably pale, soft, and watery in every part; there was no trace of a clot, or any manifest product of inflammation. Impacted within the right middle cerebral artery, just at its origin, was a firm plug of pale fibrinous substance, about the size of a hemp seed, completely blocking up the canal of the vessel, while the branches immediately beyond the obstruction were narrow, but filled with dark stagnant-looking blood, which had quite a different character to that in the other cerebral vessels. There was no trace of any disease in the coats of the cerebral arteries, and no obstruction in the left middle cerebral. Within the left lateral sinus was a large mass of old dryish colourless fibrin, somewhat adherent to the lining membrane, which was spotted red. A piece of similar fibrin existed also in the left internal jugular, but not connected with the mass in the lateral sinus. The other cerebral sinuses and right internal jugular were free from old coagula. The pericardium was healthy within, but externally it adhered to the left pleura. The heart was about natural in size, but much diseased in its interior, the tricuspid, mitral, and aortic valves being encrusted over with large, firm, warty vegetations. On the tricuspid valve these growths were attached along the auricular surface, just above its free border. They varied considerably in size and number at different parts of the valve; many of the masses consisted of small compact roundish or oval bodies about the size of hemp seeds or bigger, attached singly or in clusters to the edge of the valve and to the tendinous cords to which they more or less tightly adhered. In structure they were firm and solid throughout, of a yellowish-white colour, and evidently composed of a dense fibrinous substance. The free border of the mitral valve was thickly studded with a continuous ridge of rough cauliflower-like masses of firm white fibrin, which formed warty excrescences of various sizes and shapes. One mass was nearly as big as a hazel-nut, firm, elastic, and solid throughout, and of a mottled yellow and red colour on section.

The aortic valves were studded by a similar crop of smaller warty vegetations. Lying loose in the cavity of the ventricle were several small brownish nodules of old blood-stained fibrin. The muscular tissue of the heart was generally healthy; but just beneath the lining membrane of the left ventricle, and occasionally deep within its substance, were numerous pale yellow or buff-coloured blotches and streaks surrounded by red borders, and having the general appearance of the changes described under the term of capillary phlebitis. The coronary arteries were healthy; so also was the general arterial system, though the aorta and its main branches were very narrow. The principal venous trunks contained recent coagula, but the

two internal and external iliac veins, and both femoral veins, were blocked up by old variously-discoloured masses of firm, friable fibrin. These old coagula were very large, and produced great distension of the veins in which they occurred. There appeared to be no disease of the coats of the veins, and the coagula were nowhere adherent to them; and the arteries leading to the lower extremities were free from old coagula.

There was nothing peculiar in the blood generally. The coagula in the right cavities of the heart presented quite ordinary characters. There were a few scattered pleural adhesions. The lungs were generally very œdematous; both lower lobes were consolidated by masses of fibrinous deposit, consisting principally of reddish-brown pulpy material, surrounded by darker portions composed of recently extravasated or stagnant blood. In some parts of the right lower lobe were several collections of greenish thick pus, the majority being about the size of peas, a few as large as a walnut. All the branches of the pulmonary artery leading to the lower lobes were completely plugged up by old, firm, variously-coloured laminated coagula. The branches going to the upper lobes also contained old coagula, though these were softer, apparently of more recent date, and did not so completely block up the canals of the vessels. The pulmonary veins contained recent coagula. The liver appeared healthy, though pale; and there were no old coagula in any of the portal or hepatic vessels. The spleen was enlarged to about three times its natural size, and very dark from extreme sanguineous engorgement; its tissue was soft and pulpy, while within its substance were several variously sized circumscribed masses of fibrinous deposit. These masses varied in colour from dirty brown, spotted with red, to bright yellow; and in consistence from that of a firm, friable cheesy substance, to that of a semi-fluid pulp. One of the collections of pulpy substance was contained in a kind of cyst bounded by the capsule of the spleen; at one point the capsule had given way, and a considerable quantity of the pulpy fluid was found in the peritoneal cavity, and smeared over the intestines. The absence of any signs of peritonitis makes it probable that the escape of this material had taken place either just previous or subsequent to death. There was nothing deserving particular notice in the state of the intestinal canal. The kidneys, though healthy in general structure, were the seat of numerous, large, yellow, fibrinous masses, similar to those in the spleen. In the left, these masses were so abundant and large as almost to replace the entire structure of the gland. All the masses were firm and compact; many of them were surrounded by zones of redness. The main artery of this kidney, from the point of its entrance and along all its traceable subdivisions, was filled up by pale, firm, old fibrin. Similar, though redder, old coagula existed in the renal vein. There were no old coagula in the artery or vein of the right kidney, which, moreover, was much less diseased than the left.

In all essential respects this case closely resembles the two previously narrated. In each there was pale softening of the brain; a plug of fibrin obliterating the canal of one of the main cerebral arteries; masses of fibrinous deposit in the kidneys and spleen; and, which seemed to be the source of the mischief elsewhere, large, warty, fibrinous excrescences on the left valve of the heart.

So many, and yet such rare features of resemblance, cannot fail in demonstrating a very close connection between the several morbid appearances so exactly reproduced in each case.

Although in the autopsy of the last case it was not particularly noted that the right side of the brain, or any portion of it, was softer than the rest, yet the existence of hemiplegia on the left side, and the softening in each of the former cases being most marked at the parts supplied by the obstructed arteries, leave little room to doubt that in this case also, those portions of brain supplied by the right cerebral artery were more atrophied, though perhaps not manifestly much softer than other parts whose vessels were not thus obstructed.

Besides the existence of fibrinous vegetations on the valves of the left side of the heart, and the formation of fibrinous deposits in other parts freely supplied with blood by the left ventricle, it is worthy of particular attention that in this case there were also warty growths on the tricuspid valve, together with coagula in the pulmonary arteries, and masses of fibrinous deposit in the substance of the lungs. The *importance of this fact*, in support of the close and direct connection between *deposits on the valves* of the heart, coagula in the arteries, and fibrinous deposits

in various organs, will be again noticed. At present I would allude to it merely in support of the view that the clot in the middle cerebral artery was in this, as in each of the other cases, directly derived from the vegetations on the left valves of the heart.

At first it appears singular that in each of these cases, as also in others I have had the opportunity of seeing, the clot should be found as nearly as possible in the same situation. But a glance at the arrangement of the arteries at the base of the brain, especially in an injected specimen, will make it clear that this point is, of all others, the one perhaps most likely to arrest a solid mass floating in the blood, transmitted to the brain by the internal carotid artery; for almost directly after its entrance into the skull, the carotid divides into its two main branches, the middle and anterior cerebral, which immediately diverge in almost opposite directions. The sudden diminution in size, resulting from the division, and the different directions at once taken by the two branches, will together tend to make the angle whence the branches diverge well calculated to arrest any solid body transmitted along the carotid: while, since of the two branches, the middle cerebral is the largest, and also maintains more nearly than the anterior the original direction of the trunk from which they both sprang, a solid body seems more likely to pass into it than into the anterior division. And such is found to be the case; for if the plug is not found sticking directly at the angle, it is found a short distance up the canal of the middle cerebral.

Once arrested at the angle, or within the canal of the middle cerebral artery, a mass of fibrin, if large enough to block up the vessel, becomes at once the cause of loss of function and subsequent atrophy to almost all that portion of the brain supplied by the obstructed vessel; for, although by the arrangement of the vessels composing the circle of Willis, ample provision is made against obstruction ensuing in any of the main arterial channels of either side *previous* to their arrival at the circle, there is comparatively little provision for an obstruction ensuing in any of the main branches into which this arterial circle breaks up. This remark applies especially to the middle cerebral artery, which, if plugged up at its origin, becomes at once almost useless as a blood-vessel; for nearly all its divisions, especially those for the central parts of the brain, proceed to their several destinations without receiving any anastomosing branch from the other divisions of the circle of Willis. The truth of this will be evident on examining an injected brain: and the fact at once explains, why the portions of brain supplied by the branches of an obstructed middle cerebral artery, are deprived of all nourishment, except the little they may receive from the minute inosculations provided by the ultimate divisions of other arterial branches of the circle of Willis. The anterior cerebral artery is, by means of the anterior communicating branch, in great measure guarded against the occurrence of a similar evil; and in this way may be explained the infrequency of softening of the anterior cerebral lobes compared with the more frequent occurrence of this condition in the parts supplied by the middle cerebral artery.

I trust that the details of the three cases will be considered sufficiently satisfactory to establish the two principal points which I have been desirous of proving in this part of my communication;

Namely, *first*, that softening of a portion of the brain, with attendant loss of function, may result from obstruction of a main cerebral artery by the lodgment of a plug of fibrin within its canal;

And, *secondly*, that the foreign substance thus obstructing the vessel is probably not formed there, but is derived directly from warty growths situated on the left valves of the heart.

It has long been admitted that any disease of the cerebral arteries sufficient to impede the transit of a due quantity of blood may induce softening of the brain, from imperfect nutrition. But the diseased state of the vessels to which nearly all observations on the subject apply, have reference only to the peculiarly fatty or atheromatous condition so frequently presented by the coats of the cerebral arteries, especially in persons of advanced life.

It is probable that many cases of partial and temporary paralysis suddenly ensuing, in one or more limbs, in young persons, especially if accompanied with signs of cardiac disease, may be due to interruption of a due supply of nutriment to the brain by the temporary plugging up of a principal cerebral artery by fibrin detached from a diseased valve on the left side of the heart. Temporary loss of power in one or

more limbs is not an uncommon circumstance in young persons affected with heart-disease.

[Having now discussed the effects of large masses of fibrin washed from the valves into the current of the circulation, Dr. Kirkes proceeds to describe those produced by smaller ones. One effect of these seems to be the formation of the fibrinous-looking substances sometimes found in the spleen and other organs, and known as 'capillary phlebitis,' 'metastases,' 'fibrinous deposits,' &c.; but in all cases they result from the direct transmission of particles of fibrin from the valves of the heart, or elsewhere.]

Out of 21 cases in which I have observed these deposits in the spleen, kidneys, or other parts supplied with blood directly from the left side of the heart, and in which I have noted the condition of the heart and other principal organs, I have found disease of the valves or of the interior of the left side of the heart in every instance but two; and of these two exceptional cases, one was a case of cholera, in which a doubtful mass of capillary phlebitis existed in the liver, the other a case of aneurism of the aorta,—which tends rather to prove than disprove the explanation I offer of the fibrinous masses existing in the various organs. Omitting these two cases, however, I find that of the remaining 19 it is not merely stated that the heart or the valves were diseased in each of them, but that in 14 there were fibrinous growths on the surface of the left valves or interior of the left cavities, while in the remaining 5 there is simple mention of valvular disease, without any statement as to whether the fibrinous deposits existed or not. The mere fact of so large a number of cases of so-called capillary phlebitis in internal organs being distinctly associated with the presence of fibrinous material on the valves of the heart, is sufficient to suggest a very close relation between these two morbid states; and the existence of some such close relation is rendered more probable by the absence, in all these cases, of any other condition likely to have induced a poisoned state of the blood, to the existence of which the formation of these deposits has not unfrequently been ascribed. In many of the cases cardiac dropsy is noted as the fatal disease, while in none of them does there seem to have been any proof of the existence of a so-called blood-disease, such as typhus, purpura, or the like.

That such blood-diseases have, indeed, nothing to do with the deposits in question seems proved by the fact that, out of the examination of a large number of fatal cases of fever, I have never yet met with an instance in which masses of capillary phlebitis existed in any part of the body in this disease. From their general absence in other diseases, then, as well as from their frequent occurrence in diseases of the heart, we have equally strong reason for believing in the existence of a close connection between these morbid deposits in internal organs and the presence of fibrinous growths on the inner surface of the heart or on its valves.

The close connection subsisting between endocarditis and fibrinous deposits in distant organs has, I am aware, been strongly insisted upon by Rokitansky, and has also attracted the notice of Hasse; therefore it may seem superfluous to have said so much on the subject. But I would plead a twofold excuse for so doing: first, because, so far as I know, the connection pointed out by Rokitansky has never yet been confirmed, scarcely even recognised, in this country; and secondly, because I believe, with all deference, that it may admit of an interpretation somewhat different from that which Rokitansky has given. After careful and repeated perusal of all I can find bearing on this subject in Rokitansky's great work on Pathological Anatomy, I cannot find that he in any place even hints at the explanation I have ventured to offer of the real cause of the secondary deposits in distant organs in cases of valvular disease of the heart. His observations seem to show quite plainly that he ascribes them to a poisoned state of the blood, consequent on the admixture of the products of endocarditis with this fluid, whereby it acquires an increased tendency to coagulate, which tendency cannot well be manifested in the arteries, owing to the velocity of the current, but is brought about within the capillaries on account of the slowness with which the blood there moves, and the increased facility which is thus afforded for the morbid material derived from the inflamed heart to exercise its influence on the composition of the blood.

The view, however, which I have ventured to take is that the deposits in the various organs are the direct result of solid particles of fibrin detached from some part too large to traverse the

minute capillary canals to which they are brought by the circulating blood. By the obstruction which their arrest occasions, they may induce coagulation of blood behind them; while, by their mere presence, they may act as local irritants, and so induce secondary processes of inflammation and suppuration, like any other foreign body. In either or both of these ways may be produced the various appearances characteristic of these singular deposits. This view—which seems supported by the other evidence I have adduced of the direct transmission of masses of fibrin from the valves of the heart—has the advantage, too, of explaining some of those cases in which very similar fibrinous deposits are found in various organs, independent of any warty or other growths within the heart. For example, in a fatal case of aneurism of the abdominal aorta, to which I have already alluded, several patches of capillary phlebitis existed in one of the kidneys, though for the origin of these there seemed to be no other explanation than that afforded by the existence of fibrin abundantly deposited in laminated masses within the sac of the aortic aneurism. It is easy to conceive that portions of such fibrin might be broken up, mingled with the circulating blood, and subsequently arrested within the capillaries of the kidney or spleen.

[Lastly, the principal points of the subject are thus recapitulated:]

They are, 1st, the general fact that fibrinous concretions on the valves or the interior of the heart admit of being readily detached during life, and mingled with the circulating blood: 2ndly, that if detached and transmitted in large masses, they may suddenly block up a large artery, and so cut off the supply of blood to an important part; if in smaller masses, they may be arrested in vessels of much less size, and give rise to various morbid appearances in internal organs; while, under other circumstances, the particles mingled with the blood may be extremely minute, possibly the debris of softened fibrin, yet in sufficient quantity and with sufficient power to produce a poisoned state of the circulating fluid, as manifested in the production of typhoid or phlebitic symptoms: 3rdly, that the effects produced and the organs affected will be in a great measure determined by the side of the heart from which the fibrinous masses have been detached; for, if the right valves have furnished the source of the fibrin, the lungs will bear the brunt of the secondary mischief, displaying it in coagula in the pulmonary arteries, and various forms of deposit in the pulmonary tissue; but if, as is far more commonly the case, the left valves are affected, the mischief is more widely spread, and may fall on any systemic part, but especially on those organs which, such as the brain, spleen, and kidneys, are largely and directly supplied with blood from the left side of the heart.—*Edinburgh Med. and Surg. Journal, July* 1, 1853, *p.* 119.

29.—ON THE CAUSES OF DILATATION OF THE HEART.

By Dr. W. T. Gairdner.

[Dr. Gairdner read a most valuable paper upon this subject before the Medico-Chirurgical Society of Edinburgh; dwelling also upon the connexion of the heart affection with disease of the lung. He sums up by a synopsis of the whole. He says:]

The following conclusions seem to be fairly deducible from this inquiry, as to its ultimate and most important results:

1. It is *possible* (judging from other cases which I have observed, I should say *not improbable*), that disease of the aorta and of the kidney may have an influence in determining cardiac hypertrophy. In the case of the kidney, however, this influence is exceptional; in the case of the aorta, it is only exercised in extreme cases of disease, and chiefly in the case of aneurism or dilatation of the arch.

2. There is no good reason to ascribe to disease of the liver, pancreas, spleen, or brain, any considerable influence in determining disease of the heart.

3. Chronic disease of the lung has a most important influence in determining hypertrophy and dilatation of the heart; and the very great majority of cases of cardiac disease, not caused by deformity of the valves, owe their origin to pulmonary affections.

4. Hypertrophy and dilatation of the heart, arising from pulmonary disease, affect

in the first instance the right cavities; but when the hypertrophy exceeds a few ounces, the left cavities also become invariably involved in the disease.

5. It is *possible* that part of the influence of pulmonary disease on the heart may be due to obstruction of the circulation in the pulmonic capillaries (as is commonly supposed); nevertheless, it appears, that under various circumstances producing serious pulmonary obstruction, hypertrophy of the heart does not occur in a considerable proportion of cases.

6. Tubercular disease of the lung produces hypertrophy of the heart only when combined with pulmonary atrophy and induration. Retrograde or obsolete tubercle, with contracting or obliterated cavities, concretions, cicatrices, &c., is very generally associated with secondary disease of the heart; while advancing tubercle has no appreciable influence (or rather, is frequently the cause of cardiac atrophy).

6. It is not ascertained that pneumonic consolidation, considered *per se*, has any tendency to produce cardiac hypertrophy; but in some cases it appears to do so when accompanied by atrophy or collapse of the lung and emphysema.

8. The great majority of the pulmonary lesions which give rise to hypertrophy and dilatation of the heart are accompanied by partial atrophy of the lung; and usually also by emphysema, which (as I have elsewhere shown) is the almost invariable consequence of such atrophy.

9. Atrophy of the lung tends, in an equal degree, to produce cardiac disease, whether it proceed from bronchitis, pneumonia, or tubercle; whether it be "simple atrophy," or accompanied by induration; whether it be seated at the base, apex, anterior or posterior parts of the lung. Generally speaking, a given amount of pulmonary atrophy may be expected to develop a degree of hypertrophy of the heart, proportionate to the dyspnœa which it entails, and the amount of contraction produced by it in the affected tissue.

10. The well-known concurrence of emphysema with hypertrophy of the heart is in all probability due to their common origin in atrophic lesions of the lung; the law of production of the one affection being also that of the other. It is reasonable, therefore, to suspect that pulmonary emphysema and cardiac hypertrophy may be found to be, to some extent, alternating as well as collateral affections, in cases where atrophy of the lung gives rise to the conditions necessary for the production of either.

11. It is rendered by this inquiry extremely probable, that dilatation and hypertrophy of the heart are never otherwise than secondary affections; and that they are dependent, in the very great majority of cases, 1st, on valvular deformity and other obstacles to the circulation in the heart or great vessels (dilatation *from within*); 2nd, on the expansion of the thorax under abnormal conditions (dilatation *from without*). The consequence of either of these forms of dilatation, or even of the tendency to either of them, may be hypertrophy of the muscular substance, due to the effort of the organ to act effectively under an increased resistance to its contraction. In the case of dilatation *from within*, an increased power is required to overcome an obstruction in the circulating system itself; in the case of dilatation *from without*, hypertrophy takes place, because the expansion of the thorax in inspiration tends constantly to overload the heart, and this tendency can only be resisted by increased muscular force. The increase of dilatation without corresponding hypertrophy (the *aneurisme passif* of Corvisart) is always the signal of disaster; because it indicates that the balance of the circulating forces is finally destroyed.—*Brit. and For. Med.-Chir. Rev., July*, 1853, *p.* 224.

30.—*Upon Fluids which Stop Hemorrhage.* By SEDILLOT.—*Eau de Pagliari*, consisting of tinct. benzoes, ʒ viii.; alum, ℔. i.; water ℔. x. This preparation, which has a pale straw colour, and is transparent, possesses an extraordinary power of coagulating blood.

Eau de Rabel, consisting of acid. sulphur., 100 parts; alcohol, 300 parts. The acid should be poured upon the alcohol slowly.

Baume de Compingt has not yet been analysed, but appears to contain an empyreumatic oil.

Eau de Hepp is a modification of the Eau de Pagliari.—*Med. Times and Gazette*, Sept. 10, 1853, *p.* 274.

DISEASES OF THE ORGANS OF RESPIRATION.

31.—HINTS ON AUSCULTATION, WITH A VIEW TO THE SIMPLIFICATION OF TERMS AND ARRANGEMENT.

By Dr. Theophilus Thompson, F.R.S., &c.

[The advantages of auscultation in the examination of diseases of the chest have not always been realized, perhaps, especially from our being apt to regard the phenomena observed as intricate and complicated. Dr. Thompson observes:]

The soft silky sound, heard on listening to the chest of a healthy individual in the act of breathing, cannot be mistaken. Every practitioner must have had frequent occasion to observe this silky murmur superseded by bubbling sounds, when, in consequence of affections of a catarrhal character, the air in its entrance and its exit passes through the secretions with which the air passages are occupied: the sound being necessarily modified according as this secretion is confined to bronchi of considerable calibre, or diffused through the smaller tubes, or the aërating tissue of the lungs. When the smooth expansion of this tissue is prevented by causes extrinsic to the cells, and the air in expiration does not pass through secretion, the sound produced has not a bubbling character, and may be confined to the period of inspiration. In this way, varieties of crackling and crepitation sounds originate.

When, in consequence of thickening of the investing membranes, or the presence of any partial obstacle, the calibre of the bronchi is altered, vibratory sounds are induced, which may be grave or acute, according to the diameter of the passages affected.

The simple view thus presented sufficiently represents the principal circumstances, which require to be considered in the practical application of auscultation to those diseases of the chest, in which difficulties are most frequently experienced and errors most readily committed.

[In the subsequent tabular arrangement, Dr. Thompson only includes the sounds of practical importance. Several others, as modifications of voice, cardiac sounds, &c., are generally easily distinguished and sufficiently expressive.]

	Sounds.	Synonyms.	Character of sound.	Relation to Inspiration.	Relation to Expiration.	Common seat.	Accompanying disease.
1.	Bubbling.		Unequal irregular bubbles altered by cough.	——	——	Middle of both lungs.	Bronchitis.
	a. Bubbling rhonchus.	Mucous rhonchus.					
	b. Small bubbling rhonchus.	Subcrepitant rhonchus.	Few irregular bubbles.	—	——	Base of both lungs.	Capillary bronchitis.
	c. Gurgling.	Cavernous rhonchus.		——	——	Summits.	Excavation.
2.	Clicking.	Humid crepitation or humid crackling rhonchus.	2, 3, or 4 clicks.	— — —	—	Summits.	Softening tubercle.
3.	Crackling.	Dry crepitation or dry crackling rhonchus.	2, 3, or 4 dry sharp sounds.	— — —		Summits.	Unsoftened tubercle.
4.	Crepitation.	Crepitant rhonchus.	Numerous minute, similar rapid puffs, like salt on fire, or rubbing lock of hair between fingers.	——		Base of one lung.	Pneumonia
5.	Vibration.						
	a. Sonorous rhonchus.			—	——	General	Bronchial asthma, &c.
	b. Sibilant rhonchus.			——	—	General	

It is undesirable to give similarity of name and juxtaposition in arrangement, to sounds characteristic respectively, some of inflamed lungs, others of consumption, and I would venture to propose, as simple, distinct, and suited for clinical purposes, the division into bubbles, clicking, crepitation, crackling, and vibration, as in the preceding table.

The first column exhibits the arrangement which I propose; the second, the corresponding terms in most frequent use; the third, contains brief descriptions of the distinctive characteristics of each sound; the fourth notes the occurrence of the sound, whether chiefly in inspiration or expiration, or in both; the fifth, shows the most common seat of each sound; and the sixth, the principal disease in which each sound is manifested.

1. *Bubbling sounds* are produced by air passing through secretion in the bronchial tubes, as peculiarly occurs in bronchitis; in those of moderate calibre constituting what has been usually designated mucous rhonchus. The smaller bubbling rhonchus produced in the capillary bronchi, commonly known as subcrepitant, should rather be termed sub-mucous, if, from respect to long usage, the somewhat questionable term "mucous" be retained. To these bubbling sounds the term rhonchus is appropriate; but I do not dignify with this title sounds probably produced externally to the cells, such as crackle and true crepitation, which are not proved to have any relation to the passage of air through secretion or vibrating tubes.

2. *Clicking* consists of a series of sounds, few in number, exactly corresponding to the term, audible in some degree during expiration as well as inspiration, and probably never existing except when softened tubercle is present.

3. *Crackling*—a term which itself defines the sound—consists of a few (not more than three or four) crackles, limited to the period of inspiration, seeming to arise at a distance from the ear, probably produced externally to the cells, and characteristic of the first stage of phthisis, although not invariably present under such circumstances.

4. *Crepitation* consists of more numerous and finer sounds than crackling. It is also confined to the period of inspiration, and is probably due to viscid secretion in the cell-walls, occasioning difficulty in their expansion. It is peculiar to pneumonia.

5. *Vibrations.* Of sonorous, grave or cooing, and sibilant, shrill or whistling rhonchus, sounds resulting mainly from vibration, and indicating flattening or narrowing of tubes, such as is common in chronic bronchitis, it may be sufficient to remark that, when occurring interruptedly, these rhonchi may be occasioned by vibrations of air produced by pellets of mucus, as is sometimes observed in pertussis; but that in proportion to the continuousness of these sounds, there is reason to suspect turgescence or thickening of the membrane, or effusion in the submucous tissue.

A few incidental remarks may here be expedient, in order to explain a little more particularly the modifications which are suggested in this communication.

The term subcrepitant rhonchus has been so long and extensively employed, that the attempt to displace it may seem a bold and doubtful experiment; but I scarcely know a medical expression which has tended to more danger in practice. The term conveys to the mind the idea of a sound analogous to that usually designated crepitant rhonchus (but which I propose to call crepitation); and has in consequence led to injurious depletion. If asked to specify the greatest abuse of auscultation with which I am conversant, I should instance the leeching and antimonializing of children, in certain pectoral affections, of which the subcrepitant rhonchus is a prominent symptom. Under the cover of a pedantic numerism, the cure of pneumonia without depletion has, on the continent especially, been assumed to be common, because this so-called subcrepitant rhonchus, although really differing in character of sound, as well as in cause, has been mistaken for the rhonchus characteristic of pneumonia. A reference to the table will show the marked difference between these sounds.

As respects diagnosis and treatment, I cannot but think that great importance may be advantageously attached to the co-existence of certain sounds with expiration as well as inspiration, with certain qualifications, particularly in reference to vibratory rhonchi; the presence of a morbid sound during expiration affording evidence of the presence of secretion within the cells or tubes. This view is supported by the concurrence of clicking, from softened tubercle, with both respiratory actions, as contrasted with the inspiratory crackle of the first stage of phthisis. The same peculiarity distinguishes the small bubbling (submucous rhonchus) from true crepitation (crepitant rhonchus), which resembles the noise produced by rubbing a lock of hair between the fingers, and conveys to the mind an idea (probably in harmony with the fact) of the abrupt forcing open of cells rendered less yielding by glutinous deposition in their walls. If the cause commonly assigned for "crepitant rhonchus"

—namely, air passing through secretion—were correct, the air in repassing should produce a rhonchus during expiration also. The presence of viscid secretion within the pulmonary cells in pneumonia may be acknowledged, without conceding that this secretion is concerned in the production of crepitation; indeed, its tenacity may be a reason why bubbles are not produced, the calibre of the capillary tubes to a certain extent remaining free. When, in the resolution of pneumonia, the secretion becomes less viscid, and occasionally more copious, the rhonchus changes in character, and the sound which has been designated the redux crepitant rhonchus, having more of a bubbling character, and more or less audible during expiration, is produced. The sound sometimes termed continuous subcrepitant rhonchus, existing only during inspiration, and accompanying pulmonary congestion such as attends some forms of fever, I should regard as a subcrepitation, not a rhonchus.

As respects the treatment of inflammatory affections of the lungs, in proportion as sounds are confined to inspiration, they afford reason for depletion; in proportion as the rhonchi become bubbling, they indicate secretion, and suggest a discontinuance of antiphlogistic treatment.

The advantage of introducing terms so diverse as is suggested in the present plan is obvious. If we speak of crackle, the first stage of phthisis is indicated; if of clicking, the stage of softening; if of crepitation, pneumonia is known to be present; if of bubbling or of small bubbling rhonchus, secretion more or less copious is known to be present in the different orders of bronchial tubes.—*Association Med. Journal, April* 29, 1853, *p.* 364.

32.—ON TUBERCULOSIS, THE CONSTITUTIONAL ORIGIN OF CONSUMPTION AND SCROFULA.

By Henry Ancell, Esq., late Surgeon to the Western General Dispensary, &c.

[The German pathologists express by the term 'tuberculosis' 'that diathesis or change in the constitution, producing and accompanying the tubercular exudation.' Mr. Ancell limits it to the constitutional disorder, and the local results he styles 'tubercular diseases.' First, on a few points with regard to the blood.]

The general composition of the blood in tuberculosis, according to the various analyses collected by Mr. Ancell, is altered from its normal condition. The corpuscles are diminished, and the albumen increased in quantity. The fibrin is below rather than above the normal amount, and, it may be inferred, is also defective in its nature. Elsner, and some other analysts, have found the fatty principles diminished. Dr. Fricke's analyses indicate an increase above the standard of health, in the lime, and a decrease in the phosphates; while l'Héritier states, that in scrofula, the earthy salts are diminished. Hence the blood may be stated generally to be degraded in quality, and endowed with a low degree of vitality.

Whether such be the real changes which occur in the blood, however, is not yet determined with anything like certainty. Thus Andral, in his earlier contributions to hematology, showed that the fibrin was augmented in phthisis pulmonalis; and there can be little doubt that in many cases of that disease, especially where intercurrent pneumonia prevails, it is so. Again, Dr. Glover of Newcastle, from his analyses, maintained that the fats were not diminished in the blood. The fact is, the blood is continually undergoing changes, is constantly receiving matters from the primary and secondary digestions, and as constantly giving off matters by the processes of secretion and excretion. Hence diet, exercise, time of the day, and a multitude of circumstances, so affect the circulating fluid as to render it very difficult to decide as to its typical composition in any particular disease. On the whole, however, we have no doubt that the blood corpuscles and fatty principles are diminished in quantity, whilst the albumen is comparatively augmented, a condition that seems to us made out by all the chemical, physiological, and pathological researches with which we are as yet acquainted.

Such an altered physical condition of the blood is necessarily accompanied by deviations from the perfect physiological standard of the corporeal functions. This is evinced by a greater or less degree of constitutional debility, a deficiency of vital powers, and weakness of all growth in the ultimate nutrition of the body. Hence

the waste which takes place from the beginning, first, in the coloured corpuscles of the blood, and secondly, in the muscles and other tissues. Thus the whole phenomena of the predisposition and the symptoms of the disease show—1st, That from the earliest invasion the sum of the vital force is either below the standard of health, or it is relatively low as respects the structure and organization of the individual; 2d, That this diminution in the sum of the vital force is dependent on the imperfect blastema of the diseased blood causing perversion of the tissues; 3d, That as tuberculosis advances, the sum of the vital force for the whole system continues to diminish; 4th, That the nutritive powers of the blood, as respects the nervous tissue, frequently remain undiminished, this tissue not requiring for its nutrition compound principles identical with it to be introduced into the blood with the food, and having a nutrition peculiar to itself, differing from that of the cellular and muscular structures.

These general propositions will, we believe, be readily agreed to, and the hypothesis advanced to explain the integrity of the function of innervation, whilst that of nutrition is lowered, if not demonstrated to be true, must at least be regarded as ingenious, and consistent with the humoral pathology of the day. Mr. Ancell, however, derives from them some practical inferences, not the least important of which is that in reference to the general disease. The diagnostic object here is not to determine whether a local tuberculous development exists—a pulmonary or abdominal tuberculosis—but rather to determine whether the patient is truly affected with the blood disease, and thereby threatened with its local manifestation. He considers the successful treatment of the disease of the blood in this stage, based on a knowledge of its nature and causes, is in many instances certain. The successful treatment of the disease, after it has localised itself, is frequently impossible.

Now we consider this to be remarkably sound theory; but the difficulty is to carry it out practically. How are we to distinguish such a preliminary condition, one in which the blood only is affected, before the local disease comes on? Mr. Ancell admits that, in estimating the symptoms of tuberculosis, that is the blood disorder in a practical point of view, their absolute value, taken singly, is comparatively little, since one and all occur in other diseases. He considers that it is their relative value—the association of several, or the harmony of many in one case, the manner in which they arise, and their mode of succession, which distinguish them from the symptoms of other diseases, and assist us in the differential diagnosis. Many of these symptoms are found associated in chlorosis, simple anæmic debility from venereal excesses, and other conditions of the economy.

With regard to the structure of tubercle itself, the author cites the opinions of various histologists, who have resolved it into molecules, granules, and imperfectly developed cytoblasts and cells—the latter being in general very defective, of an irregular shape, rarely round or oval, frequently angular. From this description, those corpuscles are evidently meant which contain no nuclei, and which, in point of fact, are not cells at all.

[As to the *causes* of tuberculosis, though he enters into an elaborate statement, he yet encounters some difficulties.]

Mr. Ancell, in following out his view, with regard to tuberculosis being the blood disease, is under the necessity of throwing the causation a step further back as it were, and, in doing so, experiences unusual difficulties. Then, as he considers statistics to be the only ground for arriving at satisfactory results, and as these are very loose materials to work with, no very solid or well-formed result has been arrived at. Hence, so far as we can make out, Mr. Ancell attributes vast influence to an hereditary taint; and, as respects the individual, supposes the disease to be the result of combined rather than of particular causes. We have long been persuaded, that the only cause is an imperfect nutrition, and that the principal origin of this is a derangement in the primary digestion. Mr. Ancell, on the other hand, maintains, that the most powerful causes are a vitiated atmosphere, insufficient muscular exercise, and the depressing passions, all of which he thinks meet, as it were, at one common point, and have probably one essential modus operandi, viz., an insufficient renewal of pure atmospheric air, or an abnormal condition of the air habitually contained within the chest. But Mr. Phillips, whose work on Scrofula was also based, to a great extent, on statistical details, as elaborate and careful as those of Mr. An-

cell, came to the conclusion that improper food holds the first place in the production of tubercular diseases, whilst a vitiated atmosphere is scarcely appreciable.

[The chapter on 'The Essential Nature and General Pathology of Tuberculosis' is more satisfactory. Mr. Ancell observes:]

"The theories of Buffalini, Canstatt, Mr. Simon, and Dr. Hughes Bennett, undoubtedly approximate more closely to the real question of the essential nature of the disease than either of the others, ancient or modern. There is also no doubt that the whole, however theoretical, and however in some points they may differ from each other, are founded upon the facts of modern science. After all the attention I have been able to bestow upon the subject, I have no hesitation in declaring my opinion, that Dr. Hughes Bennett has advanced the farthest in this investigation; and I believe that the pursuit of the inquiry in the direction indicated by these pathologists, and especially by the latter, will ultimately lead us to a knowledge both of the modus operandi of the causes, and of the essential nature of the disease."

He concludes the discussion of this subject as follows:—

"We thus trace this fatal disease to a primary error or defect in the blood-making process. Vitiated air, or air stagnating or insufficiently renewed within the chest, and probably other anti-hygienic influences—as a vitiated or defective diet—acting singly, coetaneously, or as respects each other ancillary, produces, slowly under ordinary circumstances, but occasionally with great rapidity, some unknown change in a portion of the proteiniform principle of recently formed liquor sanguinis; this change may consist in hyper-oxidation, but whether so or not, it deteriorates its properties, rendering it more or less, or altogether, unsuitable as a material for organisation. At the same time, the oily principle of nutrition, circulating with a diminished number of red corpuscles, is, in part, converted into a fatty substance of a lower degree of oxidation. These modified proteiniform and oleaginous principles are exuded in the blastema, and are either employed in the assimilating processes, deranging the nutrition of many of the organic structures, and giving the tuberculous or scrofulous character to various pathological processes; or, in the more advanced stage of the morbid process, they are deposited in particular tissues and accumulate, generally in the form of turbercle, but sometimes both as tubercle and morbid fat; substances, for the most part, incapable of organisation.

"In the present state of pathological science, confining ourselves to its legitimate object, the study of *phenomena*, apart from any metaphysical views of final causes relating to the *powers* of nature, this appears to us the most accurate definition that can be given of the most essential nature of tuberculosis."

[In the chapter on *Treatment*, he considers the baneful effects of vitiated air, and enters upon the subject of a proper diet and other hygienic measures.]

These are—1st, to supply the blood with its constituent materials in a state of purity, in sufficient quantity, and in due proportion; 2nd, To adopt all such measures as are calculated to promote the elaboration of the materials of nutrition, the formation of healthy blood, and the elimination of effete matter; 3rd, To promote healthy cell growth, and a consequent vigorous nutrition of the organic structures, a symmetrical growth and development of every part and of the whole bodily frame, and a healthful waste and repair. Our limits prevent us entering into the various means indicated by the author for accomplishing these ends; we would, however, call attentien to the following judicious observations, because we fear that they are far too little attended to in practice:

"The indisposition to muscular exertion in a majority of tuberculous subjects, and to both mental and muscular exertion in others, has been described. The proceedings adopted to counteract this tendency require to be based upon the most judicious principles. We have to bear in mind, that we are dealing with a state of health in which there is direct debility, or a very inadequate development of vital force. At the same time there is morbid excitability, and accordingly, by injudicious proceedings, a great risk of exhausting the little power that exists. The effect of that exhaustion is, necessarily, to arrest all those processes upon which the system is dependent for the renewal of muscular power. Violent temporary exertions, under these circumstances, can but be most injurious, and it is in this way that occupations of life attended with such exertions prove injurious. They tend to a still smaller production of vital power, and confirm the debility of the disease. Many an in-

vidual who might have lived for a long period, or recovered, has had the disease irretrievably precipitated by such exertions. At the same time, moderate, continuous exercise, which expends a portion of the available vital force without exhausting it, induces the natural reactions by which it is renewed. That is to say, it excites the action of the heart and arteries—the nutritive processes in all the tissues—the demand for supply or the appetite—the digestive and respiratory functions—and the reciprocal actions of organising molecules, and the physical agents essential to life. Keeping these principles steadily in view, they may be made to operate as unerring guides in regulating the exercise of tuberculous subjects. It must not be overlooked, that in turberculous subjects the heart is most frequently small and weak, and that it is often especially so in relation to the voluntary muscles and muscular power; rendering it excitable and liable to palpitation and exhaustion.

"The vital force should never be exhausted. The rule usually laid down, is 'to encourage as much exercise as can be borne without fatigue.' A better rule would be, to allow of as much exercise as the patient can bear without producing a greater degree of fatigue than will be entirely recovered from after moderate rest. This distinction may appear trivial, but the best test of the injurious or beneficial tendency of muscular exercise, is found in the state of the muscular and other manifestations of vital power after subsequent rest.

"If a tuberculous subject retire at night fatigued, this is but natural, but if he rise also fatigued after a proper amount of sleep, either the exercise of the previous day has been excessive, or it has not been of a proper kind in relation to his state of debility and the slowness with which his system recruits its vital force. If the same amount of expenditure of force be kept up from day to day with the same results, the exercise he takes is increasing his debility; assimilation, and particularly cell-growth and nutrition, becomes less and less perfect, the destructive exceed the assimilative processes in the organic tissues, and atrophy sets in or progresses. Diminished nutrition is the result of this exhaustion; and thus, the labours of the day, which ought to sustain the vital force, absolutely destroy the very source of its supply."

[Speaking of the medicinal treatment of tuberculosis, Mr. Ancell considers cod liver oil to be the most important therapeutical agent.]—*Monthly Journal of Med. Science, July*, 1853, *p.* 64.

33.—ON ACUTE TUBERCULOSIS.

By Dr. William Jenner.

[This disease very often similates typhoid fever, and like it rarely affects people above the middle period of life. It generally assumes one of three forms—the insidious, the active febrile, and the adynamic.]

The first form occurs almost exclusively in children; the patient often after measles, or scarlet fever, but not unfrequently without known cause, is observed to be languid; unwilling to make any exertion; complains of headache; lies about; seeks quiet, leaving its companions; is heavy, dull, or irritable in temper; the skin is hot and dry; the pulse frequent; the tongue moist, and slightly furred; the appetite lost, or variable; the bowels confined, or irregular; the stools more or less clay-like, putty-like, or party-coloured; the abdomen free from tenderness, and of its normal form; there is trifling cough, and a little sonorous or sibilous râle, or the respiratory murmur is simply rough or harsh, and the expiration rather loud and prolonged, or, it may be, perfectly natural. Some time usually elapses before advice is sought, so indefinite are the symptoms of the illness; and, after it is sought, the physician is occasionally some time in attendance before the gravity of the affection is comprehended; for the febrile symptoms often remit during the day, the skin being little above its natural temperature, and the pulse only a little quicker than natural, when he makes his visit. Thus the disease proceeds for two, three, or four weeks, when the functions of some one organ become disturbed in an extreme degree, and the patient dies with all the symptoms of acute hydrocephalus, tubercular meningitis, bronchitis, pneumonia, or peritonitis.

After death, in such a case, grey granulations, or yellow tubercles, are found in

many organs; only in the particular organ from the disorder of which the patient died, in addition to grey granulations, great vascularity, or the products, more or less abundant, of inflammation, serosity, lymph, or pus, are discovered.

In the active febrile form, the symptoms are from the outset severe, the pulse is quick, and the heat of skin considerable, and the patient, from an early period of the disease, confined to bed.

In the third, or adynamic form, the illness begins somewhat suddenly, after a trifling sense of *malaise* of a few days' duration. The symptoms are, chilliness, hot skin, frequent pulse, moist furred tongue, headache, loss of appetite, confined bowels, vomiting, considerable sense of weakness, great unwillingness to be disturbed, with irritability of temper. After a week or ten days, the mind wanders occasionally, the bowels are generally confined, and the abdomen flat or concave; though the former are sometimes relaxed, and the latter full. The skin continues hot, dry, and harsh; the tongue becomes dry and brown; sordes collect about the teeth; prostration is extreme, and the patient sinks about three or four weeks after the outset of the disease. The two last described forms of acute tuberculosis are seen occasionally in the adult; but, in them, the recent deposit of tubercle, the newly formed grey granulations, are almost always limited to one or two organs; in the cases which have fallen under my own observation, the pia mater, or the lungs, or both. Under these circumstances, more or less marked disturbances of the functions of the lungs or brain are observed. At the same time, the general symptoms may be either those of the active febrile, or of the adynamic variety. In the *former* case, the disease may be mistaken for idiopathic inflammation, and the general symptoms be regarded as symptomatic; in the *latter* case, the disease may be thought to be typhoid fever.

The diagnosis from typhoid fever, when the granulations occupy the pia mater, is formed *positively* from the frequency of the vomiting, the severity of the headache, and its continuance after the patient is delirious, the knitting of the brows, the frequent sighing, the dislike to light, the occasional and transient general flushings of the face, the slowness of the pulse, and the evidence of paralysis. So long as it is very imperfect, the paralysis may escape observation, unless especially looked for. It is manifested thus:—Sometimes one pupil contracts rather less completely or less actively than the other, when exposed to a strong light. Sometimes there is slight deviation of the tongue. Sometimes the uvula is drawn to one side, and the opposite half of the velum pendulum palati drops. Sometimes one radial artery is felt to be a little larger than the other, such differences not being natural to the patient. This last evidence of paralysis will occasionally precede any appreciable loss of voluntary muscular power.

There is this seeming peculiarity about these imperfect paralyses in the disease in question, viz., that when observed on the one side on any given day, on the following day the opposite side may be found to be the diseased side. This shifting of the disease is—in many cases, at least—rather apparent than real; thus, the paralysis of the right side we will suppose to be very imperfect, but still sufficient to cause *comparative* sluggishness of the right pupil. On the following day, the left side is the more perfectly, though still imperfectly paralysed; then there is *comparative activity* of the right pupil.

Negatively, the adynamic form of acute tuberculosis, with deposit of grey granulations in the pia mater, is distinguished from typhoid fever by the absence of diarrhœa, of distension of the abdomen, of enlargement of the spleen, and of rose spots.

But all the positive signs may be wanting till near the close of the disease; and, on the other hand, diarrhœa, tympanitic distension of the abdomen, and enlargement of the spleen, may be present, sometimes with, sometimes without, the deposit of tubercles under the mucous membrane of the intestine, and in the spleen. As regards the rose spots, I have never seen them in a case of acute tuberculosis. But Dr. Waller, of Prague, states, that he has observed them in cases of acute phthisis; and Rilliet and Barthez say, that very fugitive, imperfectly formed rose spots are in rare cases present.

In reference to those cases in which the deposit of grey granulations is limited to the lungs, the positive symptoms for establishing the diagnosis are derived from the signs of oppressed breathing, the rough inspiratory murmur, with intense and pro-

longed expiratory murmur, and the general diffusion of these signs pretty uniformly over both lungs. Hæmoptysis occurs in some of these cases—rarely, if ever, in typhoid fever.

The affinity of acute tuberculosis with typhoid fever is shown by the general symptoms of the two being often undistinguishable, by the frequency with which particular parts are, in both, the seat of disseminated protein deposits, and by the tendency manifested in both to ulceration, not only of the mucous membranes generally, but of a part of the intestinal mucous membrane which is rarely the seat of ulceration in other diseases, viz., that covering Peyer's patches.

With reference to the close resemblance of the symptoms in some cases of local inflammation, with adynamic symptoms, and typhus fever, of acute tuberculosis and typhoid fever, of measles and scarlet fever, of typhus and typhoid fevers, I would quote the following sentence by the author of the "Philosophy of Medical Science:"—"It is very important for us to bear in mind, that great difficulties of diagnosis in individual cases are in no way incompatible with the existence of essentially and widely different diseases. Morbid affections, very unlike each other, and in most cases easily distinguishable, may, under certain circumstances, have many things in common; and their symptoms may be so mixed up with each other, as to render, in the very imperfect state of our knowledge, a positive diagnosis very difficult or impossible, and this without throwing any doubt upon the general question of the radical dissimilarity between the diseases themselves."—(Bartlett, p. 321.)—*Med. Times and Gazette, May* 7, 1853, *p.* 464.

34.—ILLUSTRATIONS OF TUBERCLE.

By Dr. Edward Henry Sieveking, Assistant Physician to St. Mary's Hospital, &c.

[The term tubercle, though synonymous with "nodule," has generally come to imply a certain form of deposit occurring in a peculiarly fatal diathesis. The importance of this need not be dwelt upon here.]

That constitutional tendency which leads to the deposit of tubercle, and is to be found wherever the necessary stimuli of life, and, above all, pure atmospheric air, are deficient, predisposes to other diseases as well; it assists the approach of the enemy, and actually places the fortress in his power before a formal assault is made. Though we no longer believe in the elements of Thales, we may, without a great stretch of the laws of the natural sciences, admit that air is the chief element of health or disease, according as it is supplied to the lungs in its unadulterated condition of four-fifths nitrogen and one-fifth oxygen, or as it carries diffused through it carbonic acid gas, carbonetted hydrogen, sulphuretted hydrogen, the effluvia of cesspools and drains, the poison of influenza or cholera, the emanations of the variolous or typhous patient.

Allow me briefly to advert to the origin of tubercle. We possess sufficient evidence to show that it is derived from the blood; that it transudes from the capillary vessels of the part in which we find it; and that, after having been deposited, it is liable to undergo certain further changes. On a close examination of incipient tubercular deposit, we may always note that there is congestion in the tissues immediately surrounding it. In the pia mater of the Sylvian fissure, we see an increased redness, in which a few vessels are more prominent than usual; in the pulmonary parenchyma we may, especially by the use of the microscope, discover the engorgement of the interlobular capillaries investing the air vesicle into which the tubercle is being secreted; in the mucous membrane of the intestines, we see the exquisite arborescent arrangement of the congested vessels, tending from the mesenteric attachment to the point where we observe the deposit shining through the mucous surface from the submucous tissue, in which it has collected. The first elimination of the morbid products acts like a magnetic point of attraction, and generally serves as a centre round which the deposit progressively enlarges by eccentric deposition. The amount of vascular action accompanying the elimination, varies in different individuals; in some, there is scarcely a perceptible increase in the sanguineous current; in others, we cannot deny the presence of acute inflammation, shown both by the congested state of the blood-vessels, and by the presence of

plastic exudation and exudation corpuscles. In ordinary inflammatory conditions, we may actually observe the part taken by the capillary vessels in the process of transudation. We see the inflammatory product immediately after its passage through the vascular membrane, coating the vessels; and, if my limited observations justify the statement, we may see the same matter within the vessels, adhering to the coats, previous to its discharge. Whether it be so or not, whether we may be enabled to observe the transition of the contents of the vessels into the surrounding parts or not, it is evident that we ought not to be satisfied with ascertaining the fact of the exudation as the primary change: we are driven to take one step more, before we gain the fountain-head of the malady; we therefore look to the constitution of the blood itself in tubercular disease, in order to ascertain whether any deficiency in the normal components, any variation in their relative amount, any new products, are to be met with, which may explain the source of the extravascular deposit. All observers, who have brought either the microscope or chemical analysis to bear on this subject, are agreed that there is an alteration in the blood, indicating a want of vigour and tone. There is a general increase in the fluid parts, the water and albuminous constituents; while the solids are diminished, the fibrine and the red corpuscles are reduced in quantity, and both exhibit what has been termed diminished vitality; the fibrine possesses less plasticity; the blood corpuscles are feebly formed, their outline less defined, their colour faint, and the colouring matter easily yielded up to the surrounding fluid. The actual relation of the white cell to the red corpuscle in various diseases has not as yet been satisfactorily demonstrated; but we are inclined to view an excessive development of the former as indicative of debility, and an aplastic, if not cacoplastic, condition of the blood; we certainly have noted an increase in their number in persons affected with tubercle. Many peculiarities in the blood of tuberculous individuals are also met with in the blood of individuals labouring under other diseases. We are not, therefore, justified in laying down any absolute indications which are conclusive evidence of the tubercular infection; and if we are unable to define the specific constitution of the blood that accompanies tuberculosis, it follows, *à fortiori*, that we are not possessed of the means of predicating a mere tendency to tubercular deposit from the constitution of the blood. This, however, is the point to which we must hope to arrive, if, as we believe, one of the primary elements of the malady is traceable to the blood, and the seeds of the disease are sown, and therefore must be destroyed here, unless they be anticipated before their introduction into the body. On this point, Mr. Ancell, in his laborious work on "Tuberculosis," judiciously remarks:—"The predisposition differs from the general disease only in degree, and the condition of the blood in the predisposition is the same, differing only in degree;" and so undoubtedly it is, but we yet want that positive and conclusive sign by which the predisposition may be recognised by analysis of the blood. It is manifest that, with regard to tuberculosis as well as other diseases, such an indication would be of extreme value; for, as the diagnosis of morbid processes in the thorax has improved, our treatment of these diseases has commensurately acquired greater simplicity and greater certainty. In the same way, it is tolerably certain that, if we discovered the means of recognising the seeds of a malady before they had taken firm hold upon the system, we should be enabled to eradicate them, or to counteract their influence more effectively than we now can.

[Though the stomach is no doubt a great agent in the production of the tubercular disease, yet Dr. Sieveking inclines to the common opinion, that the organs of óxygenation have a greater share in its development than those of sanguification. He says:]

Baudelocque, who has written some of the wisest remarks on the relation between the respiratory function and tuberculosis that I have met with, affords some very striking illustrations of this position. He states as the result of his examinations and experience, that a truly scrofulous disease is invariably caused by vitiated air, and that it is not always necessary that there should have been a prolonged stay in such an atmosphere. Often a few hours each day may suffice, and it is thus that patients may live in the most healthy country, pass the greater part of the day in the open air, and yet become scrofulous, because they sleep in a confined place where the atmosphere has not been renewed. M. Baudelocque illustrates these observations by numerous well chosen instances; he refers, among others, to the shepherds of his country, who may become scrofulous although they lead an open-air life; but

although, as he says, the disease with them is attributed to exposure to storms, to atmospheric vicissitudes, and to humidity, attention has not been paid to the circumstance that they pass the night in a confined hut, which they transport from place to place, and which protects them from the rain; this hut has only a small door which is closed when they enter, and also remains closed during the day; six or eight hours passed daily in vitiated air, which is never renewed, is the true cause of their malady. I have spoken of the bad habit of sleeping with the head under the clothes, and the insalubrity of school rooms in which a number of children are assembled together. The repetition of these circumstances is often a sufficient cause of scrofula, though they may last but for a few hours a day. Human beings and animals are equally affected by vitiated air; close rooms, as Dr. Arnott has pithily remarked, act like extinguishers to the vital flame; and the extinction literally takes place at the point at which the fuel accumulates for want of being burnt off. If space and time allowed, I would multiply the evidence that has been adduced in support of the particular view which I have dilated upon; but this is beyond the limits of this paper, and moreover, there is now scarcely a necessity for enforcing what, I believe, is the prevailing opinion among medical men. To sum up, while we would not deny that defective supply of food and raiment influences the production of tubercular disease, no cause so certainly predisposes to and generates it as defective aëration. The exact part taken by the *light* in this matter cannot be appreciated. Its direct influence upon the health of everything living is proved irrefragably; but whether its absence can alone induce morbid states of a definite character, remains yet to be proved.

As the tubercular deposit is derived from the blood, it is not surprising that all the organs of the body are more or less liable to become the seat of the morbid product. Some tissues present a greater proclivity to the elimination than others: and some, as the fibrous and tegumentary tissues, appear to enjoy almost an immunity from tubercle. At the two ends of the scale, we may place the mucous membranes and the fibrous tissues: the former are the true soil for this tree of death; the latter are rarely, if ever, affected. There can be little doubt that this depends in a measure upon certain physical laws, influencing the current in the vascular system, and determining the greater or less facility of transudation, in the first instance. I should venture to suggest, that we may lay it down as a law regulating the deposit of tubercle, that it is effected at that point of an organ or of a tissue where the smallest amount of pressure is exerted upon the capillary system. This does not exclude the operation of other laws, which determine the attraction to any one organ. It does not offer any reason why in one case we find tubercle in the spleen, in another in the mesenteric or bronchial glands, in a third exclusively in the pulmonary tissues; but it seems to embrace the various circumstances modifying the exact site of the deposit in these different parts of the system. The *vis a tergo* varies but little in the different parts of the capillary system; but the relation to surrounding tissues differs very much. Thus, while the force with which the blood is driven into the interlobular plexuses of the lungs is identical, the pressure which the respective capillary systems meet with in a case of congestion, which implies a tendency to exudation, is necessarily greater in the bone than in the soft parenchymatous structure. No organ is more frequently the seat of tubercular deposit than the lungs, and in none do we find the capillary ramifications of the vessels with so little covering. They almost lie naked on the surface. Beyond the basement membrane forming the air vesicles, and possibly a delicate epithelial layer, there is nothing between the capillary network and the atmosphere. We need not therefore wonder that the ultimate vesicle in which the bronchule terminates is, above all other points, that of tubercular election. The receptacle is ready; the product being in the blood, a slight increase of pressure will overbalance the natural and healthy equilibrium between the external and the internal fluids, and the discharge takes place. If our view is correct, nothing but a previous change in the ultimate vesicles or bronchules could give rise to a deposit of tubercular matter in the intervesicular tissue, in the parenchyma of the lung itself, as contradistinguished from the respiratory cavities. We can suppose that obliteration of a portion of the breathing apparatus might leave the intervesicular texture less resistent than the air vesicles; and in that case we should expect to find an interstitial deposit. Whether this does actually occur I am not prepared to say. I have not seen any appearances that would justify the

assumption of a primary interstitial deposit, but I have seen a distinct deposit of tubercular matter within the air vesicles, and I have traced its primary deposit, in the semi-liquid form, in the solitary vesicle, to the deposit in numerous adjoining vessels, causing destruction of their breathing power and obliteration of the bronchule terminating in them.

[Dr. Sieveking observes that the ultimate bronchule is perfectly free and patulous, and that the tubercular matter fills the vesicle as a bullet fills its mould. He then proceeds:]

The law to which we have adverted as, in our opinion, regulating the deposit of tubercle, viz., that the tendency to the deposit in any organ is inversely as the pressure the vessels sustain, or that it is in the ratio of the laxity of the tissues, is supported by the views which are commonly held with regard to the chemical constitution of tubercle, by the form and mode of deposit in the various organs of the body, and it also assists us in explaining why certain parts of different organs possess so marked a liability to become the seat of tubercular exudation. This feature constitutes an essential difference between tubercle as a mere effusion of a certain constituent of the blood, and those other new formations in which we cannot but see a tendency to independent development or organisation. The most familiar instance of pathological processes with which I would compare it, are the serous effusions that take place into the peritoneal cavity, from obstruction to the vena cava or portal system, inducing congestion and consequent liquid discharge at the most yielding points. If we adopt the view suggested, it appears to me to offer an explanation of the circumstance that the apices of both lungs are the chief seats of tubercle, while it tends to show the importance of encouraging the use of all the physical means at our command to promote a free and active circulation of the entire vascular current, and to obviate and anticipate anything approaching to local congestion in the organs and parts of organs which we know to be most liable, at different periods of life, and under different circumstances, to become affected with the disease in question. The manner in which I would apply the law to the explanation of the predominant proclivity of the pulmonary apices, is simply this: the upper portions of both lungs are sourrounded by more unyielding parietes than the inferior; they have less room for expansion; consequently, if there is any increase in the vascular current supplying these parts, the difference between the pressure of the parietes and of the atmosphere within the vesicles will increase unduly, and effusion will take place into the latter. In acute tuberculosis, we do not observe this peculiar election, because the process is of a more active character; the strain upon the capillaries of the entire organ is greater than they can bear, and we consequently find the deposit takes place with much uniformity throughout the lung. In the chronic forms in which tubercular deposit generally occurs, the balance of the forces in the different parts of the vascular system is in a measure preserved, and only the very weak points are assailed. We do not at all deny that other forces come into play, and that there are elective affinities between different tissues and morbid products with which we are not even acquainted as yet; but it appears that the circumstance alluded to is one of considerable importance in its bearings upon tubercle, both in the lungs and in the brain and abdominal tissues. To take a single instance from the latter: in scrofulous deposit in the kidneys, where does the tubercular matter invariably present itself? In the loose texture of the cortical substance. The dense tubular tissue, with its stronger basement membrane and firmer epithelial coat, wards off the encroachment; but the feebler texture of the convoluted tubes is unable to repel the enemy.

[Lastly, the author examines the ultimate constituents of the tubercular deposit, with a view to its general recognition and the cure of the condition on which it depends.]

The simplest definition of tubercle appears to me to be, according to the present state of knowledge, the following: *Tubercle is an exudation from the blood of a protein compound, incapable of organisation, but undergoing certain physical changes independent of vital influences.* Tubercle is, in fact, effete matter which the powers of the system are unable to use as building material to repair the normal waste; and it is deposited in this or that organ of the body according as it is invited by the greater or less debility of the part. Tubercle is not a plastic material; it is not a growth; it is not the manifestation of a depraved germinating power, superadded,

as it were, upon the normal energies of the system, or taking their place, such as we find to be the character of malignant disease; nor, on the other hand, is it identical with the effusions of blood-constituents which result from an exaltation of the normal energies, and continue in possession of their vitality, by which they are susceptible of organisation. This we do not see in tubercular deposit, which must be viewed as bearing to the diathesis giving rise to it, very nearly the same relation as, to use the strongest comparison that suggests itself to us, calculus in the bladder bears to the calculous diathesis to which it is due. There is, unfortunately, no such emunctory for the effete protein compounds, as there is for the excess of saline constituents of the blood; or tubercle might accumulate, as the latter do, at a given point, and the product be removed by operative proceedings, or by chemical solution. The lungs and the skin have this duty to perform; but I need not stop to point out to you why we have not yet succeeded in destroying the tubercular product in the former, and removing it from them, by direct applications. I do not myself despair of a remedy being discovered which, in a gaseous form, may be conveyed to the deposit in the lungs, and, by dissolving it, enable the patient to expectorate it; but this would only affect a single organ. The cachexia leading to the local product will ever remain the real malady to deal with, so that we may anticipate its local effects.

The changes which take place in the deposit itself, and which have been the source of much discussion, and of some very wild speculations, are, as I have already observed, closely allied to what we see taking place out of the human body in inorganic substances. They seem to follow the laws regulating crystallisation and chemical decomposition rather than those of vital action.

The earliest form in which tubercle presents itself to the eye is that of a faintly granular blastema, in which we are only just able to trace a tendency to aggregation into circular forms.

The next form which we find tubercle presenting is that of more definite corpuscles; they offer an oval form, with a more or less sharp outline, and a granular surface. These corpuscles are surrounded by the granular blastema before mentioned, which now becomes more definitely marked, and by and by appears to eliminate oil-globules in a greater or less quantity. The tubercular corpuscle does not present a nucleus as its normal constituent; it is, in fact, regarded by some, among whom I may be allowed to mention Dr. H. Jones, as itself a nucleus. We occasionally find cells with nuclei in tubercular matter, but I am inclined to think that they are generally, if not always, derived from the normal tissues of the organs in which the deposit has taken place.

A term has of late been brought into vogue by the authority of great names, to which, before concluding this brief sketch, it is necessary that I should allude, as the subject to which it refers is closely associated with tubercular disease. I refer to *fibrinous deposits*. Many of the cases which are thus denominated present no differences perceptible, either to the naked eye or under the microscope, by which we can distinguish the product from tubercle; and in such it is scarcely in accordance with sound induction to assume a different disease, until we are able to demonstrate a distinct primary lesion in the blood.—*Association Med. Journal, May* 27, 1853, *p.* 451.

35.—ON THE TYMPANITIC SOUND, PRODUCED BY PERCUSSION OF THE LUNG, WHEN PARTIALLY CONDENSED.

By Dr. W. O. Markham, Assistant Physician and Curator to St. Mary's Hospital.

[Dr. Markham observes, that two cases have convinced him of the fact that the percussion sound of a partially condensed lung is clearer than that of an healthy lung.]

In the one case, the left lung was found reduced by the pressure of pleuritic effusion to about one-fourth or fifth of its natural size; its lower lobe being *completely*, and its upper lobe *partially*, consolidated.

In the other case, the *partial* consolidation was general throughout both lungs; it was caused by the effusion within them of the products of inflammation, excited

by the rapid and extensive deposition of miliary tubercles. Now, when in these two cases the lungs, thus differently circumstanced as regards the nature of the disease affecting them, were removed from the bodies after death, placed side by side, and percussed, it was observed: That the *partially* condensed upper lobe of the pleuritic case, and every part of the lungs invaded by inflammation in the other—especially the posterior parts, where the consolidation was most advanced, and the lungs contained the least amount of air—yielded a remarkably clear percussion sound, which, in both cases, as far as the ear could judge, was exactly alike in its characters; the sound was that to which, for want of a better, I have affixed the term "hollow;" it is clear, high-pitched, empty, of a tympanitic character, and somewhat metallic; the vibrations of sound producing it appear superficially distributed, ceasing quickly, and not passing deeply. Perhaps it would be most convenient to designate the sound as "tympanitic," for I believe that this word is rarely in practice used to indicate merely a drum-like sound, as its origin would require; the term "hollow" is objectionable, and for an evident reason.

The left side of the thorax of the patient attacked by the pleuritic effusion yielded, two days before her death, a completely dull percussion sound at every part; and the heart was found beating to the right of the sternum. To relieve the great difficulty of breathing induced by this copious and sudden effusion of serum, a very fine trocar was introduced into the pleural cavity, and about twenty ounces of fluid withdrawn therefrom, by the aid of an exhausting syringe. Great care was taken that no air entered into the pleura, and that none did I am satisfied, having assisted at the operation. Temporary relief was thus afforded the patient; and now, immediately after the operation, on percussion beneath the clavicle, we found, instead of the completely dull percussion sound observed previously, a remarkably loud, clear, tympanitic sound—so marked, indeed, as to lead an observer to suppose that air had found its way into the chest. That there was no necessity for our thus calling in the presence of air to give reason for the sound, we had the demonstrative proof after the patient's death, when the body was examined. No air escaped from the pleura, but on puncturing the left thorax a large amount of fluid gushed forth, and when a certain amount had escaped, the partially condensed lung floated forwards against the upper and anterior walls, and its percussion now both within, and when removed from the thorax, yielded a character of percussion sound, *exactly similar to that which it had offered during life*, after a portion of the pleuritic fluid had been withdrawn.

I did not observe, during life, the nature of the percussion sound of the thorax in the case of partial consolidation, produced by tubercular inflammation, but it nevertheless well illustrates the fact I am alluding to.

The conclusions which I am justified in drawing from these cases are:—

1st, That Skoda's assertion, that a *partially* condensed lung yields a clearer and more tympanitic percussion sound than a healthily inflated lung, is correct.

2ndly, That Dr. Williams' mode of accounting for this "tracheal" sound, as he calls it, viz., by supposing that the upper part of the lung is compressed against the anterior walls of the thorax by the fluid behind, and thus being consolidated, transmits, when percussed, the hollow sounds of the large tubes, is not correct, at least in all cases, for here was an instance in which *every part* of the *partially* consolidated upper lobe yielded equally well the tympanitic percussion sound, and so also when divided to show the absence of all hollowness or large tubes.

3rdly, That the sound, so far from of necessity indicating the presence of air in the pleura, is a sign that the lung contains less than its normal amount of air.

One important practical deduction, if I am not mistaken, naturally flows from these facts, viz., that in certain cases of pneumonia, *if not in all*, when the consolidation of the lung has reached a particular stage, *but not yet that of hepatization*, the percussion sound over the affected portion, so far from being duller, is *actually clearer than natural*. The error of diagnosis into which a misinterpretation of this fact may lead the physician, is manifest enough; it may induce him at a critical period of the disease, viz., when the lung is on the eve of complete consolidation, to prognosticate a commencing return to its healthy condition.—*Monthly Journal of Med. Science, Aug.* 1853, *p.* 173.

36.—*Tannate of Quinine in the Night-Sweats of Phthisis.*—In the 'Union Médicale' for April 12th, M. DELIOUX describes several cases in which he has administered tannate of quinine with the effect of arresting night-sweats in cases of pulmonary consumption. He says that, though it is sometimes inferior to pure tannin, it is superior to disulphate of quinine; and that it combines the action of a tonic and antiperiodic. He gives it in powder, the quantity taken daily being from half a *gramme* to a *gramme* (seven and a half to fifteen grains), in three or four doses, taken at intervals during the afternoon or evening, so that the last may be administered three or four hours before sleep.—*Association Med. Journal, Sept.* 2, 1853, *p.* 778.

37.—OBSERVATIONS ON EMPHYSEMA PULMONUM.

By DR. GEORGE CORFE.

[Dr. Corfe is of opinion that any one going constantly round the wards of large hospitals would come to the conclusion that emphysema pulmonum and bronchitis are essentially blood diseases. The first disease especially occurs in people who for some time have lived upon poor vegetable food, and then, perhaps, on obtaining employment have worked hard for a few days, when they have been seized with dyspnœa, cough, and expectoration. Dr. Corfe has noticed this particularly to be the case in washerwomen and navigators. In examining the physical condition of the air and the pulmonary blood, he observes:]

The specific gravity of a cubic inch of air is ·185, that of water is 1000, and that of blood 1050. Forty cubic inches of air weigh about 12·980 grains; the same amount of blood weighs about 10,653·3 grains. Thus the latter fluid is somewhat 865 times heavier than air; or, as ·185 is to 1050. The amount of air, as it passes into the lungs, is opposed by a column of blood coming from the heart, in the proportion of one inspiration to four pulsations of the right ventricle. Each inspiration carries into the pulmonary cells 40 cubic inches of air, and the average number of inspirations in an adult is 20 per minute. Each ventricular contraction throws two ounces of venous blood into the pulmonary cells; and, as there are four contractions to one inspiration, about eight ounces of blood is therefore dispersed through the pulmonary capillaries, from minute to minute.

The ordinary amount of atmospheric pressure on the human body, at the level of the sea, is about fifteen pounds on every square inch of surface; but the air which pervades the body balances and counteracts this pressure from without, so that the elasticity of the air within and the external weight of this fluid over the whole body are exactly and equally poised; and thus it is that we are not conscious of any pressure. But if there should occur any diminution of weight in the columns of air which we breathe, this equipoise is altered—these opposing forces are unequal—the even balance is destroyed, so that one is relatively stronger, and the other is relatively weaker, than each was before any alteration took place. The effect of such diminution of weight in the air is experienced by those individuals who have ascended into a more subtle and rarefied atmosphere, as aëronauts and visitors to Mont Blanc, &c.; in such cases, the resisting power of the blood in the lungs has not been counterpoised by an equally heavy column of inspired air; so that the pulmonary capillaries have given way, the cells have broken, and blood has burst forth, and has been freely coughed up. But, in order to follow up our present inquiry, let us reverse the change, and consider the effects which may ensue upon an alteration in the other fluid, namely, the blood. This vital fluid in health contains from 778 to 853 of water, and from 57 to 78 of albumen, and from 1·360 to 2·236 of dry fibrine in every 1000 parts. In order, then, for an individual to continue in a robust and healthy state, it is needful that the blood should be duly supplied with a given quantity of albumen and of fibrine. This supply is exclusively derived from azotized substances, such as animal food, &c. If this supply is deficient, the blood loses in weight and in vigour, its watery elements are increased, and its solid contents are decreased, and thus the absolute specific gravity of this fluid approaches nearer to that of water than it does to that of healthy blood. Under these changes it cannot act as a resisting medium to a given quantity of inspired air; for if its specific gravity is reduced, for example, from 1050 to 1025, and a column of air

charged with an unusual amount of moisture is respired, the resisting force is unequal to support the weight, the air-cells burst, and the foundation of inter-lobular pulmonary emphysema is immediately established. The sense of dyspnœa now begins, and, from a small spot of such breaking up of pulmonary vesicles, an entire lobe may shortly become emphysematous. The fact, that this disease ordinarily sets in at the margins of the lower lobes, and not in the centre of the upper lobes, will further explain the mode in which emphysema occurs, namely, from the feeble resistance which a column of blood, spread over the area of the pulmonary cells, offers to the increased weight of the columns of air. Dr. Goodfellow informs me that emphysema pulmonum is very common among the coalwhippers in the east part of London. These men drink largely of porter, and eat animal food sparingly. When they raise the coal from the hold of the ship, they fill their lungs by a forced deep inspiration, grasp the rope, and leap from the steps to the deck, and then as suddenly expel the air from their over-inflated lungs. This action mechanically breaks down the delicate pulmonary areolæ, just as we should burst a thin paper-bag, by forcing a large column of air into it. This fact is mentioned in order to show that, if undue force is brought to bear upon the areas of the pulmonary cells, and that force is not met by an equal antagonistic rsistance from within, the cells must necessarily break down.

When a confirmed state of emphysema pulmonum is established, dilatation of the right chambers of the heart eventually comes on. When this change is superadded to the pulmonary disease, the attacks of dyspnœa will usually be most severe at the turn of the night, *i.e.*, from twelve to two. The circulation is then at the minimum of its twenty-four hours' cycle; and the delay which a lung bloated with pent-up air, causes to the flow of blood through it, also produces a tardy supply of blood to the left side of the heart, so that the ventricle is not roused to action by a due amount of arterial fluid. The patient now will be suddenly awoke by a sense of impending suffocation; he sits up in bed, gasping for breath, and is often many hours struggling in this distressing paroxysm, until, at length, the pulmonary circulation has become poised, the left ventricle duly supplied with blood, the cardiac muscular fibres soothed, and the dyspnœa gradually assuaged, and he once more falls into a doze.

These few observations have been founded on the pathological facts connected with the onset of emphysema pulmonum; and the practical deductions which may be made from them are the following:—

1st. That, in the majority of such cases which occur in our large towns, in over-crowded localities, or, indeed, in any vitiated atmosphere, and where the artisan or labourer is insufficiently nourished with a generous animal diet, it is a blood disease in its origin, and that this form of toxæmia is further asthenic in its character; the amount of fibrine, albumen, and red globules of the blood, is below the average standard of robust health.

2nd. That the disease is not remedied by antiphlogistic treatment, nor by blood-letting, expectorants, &c. &c., but that it is relieved by small doses of iron, quinine, and tonics, together with a generous diet of animal food and porter. Among the most useful forms of steel, that of the sulphate seems to rank the first: one grain of this salt and one of quinine in the compound infusion of roses, with syrup of ginger, is as valuable as any I know of in this distressing malady. Dry cupping between the shoulders, the inhalation of creosote in the proportion of twenty drops to a pint of boiling water each night, the occasional use of a stramonium cigarette, or twelve drops of chloric ether, have severally been known to ward off an attack of nocturnal dyspnœa. The fumes from a slip of lighted nitre touch-paper have long been a favourite remedy in the wards of this hospital for cutting short an attack. A gentleman of my acquaintance is always greatly relieved by a large dose of the hydrochlorate of ammonia, which he takes as soon as he feels the paroxysm approaching. —*Med. Times and Gazette, July* 23, 1853, *p.* 86.

38.—CREOSOTE INHALATION IN PHTHISIS AND BRONCHITIS.

By Dr. Thomas Inman, Liverpool.

[In a letter to the editor of the 'Medical Times and Gazette,' Dr. Inman speaks of

the benefit derived in these diseases from the inhalation of creosote, combined with steam. His first experiment with it was in a case of phthisis, when it succeeded in relieving the irritating cough, after a host of opiates and other remedies had been tried in vain. He says:]

Encouraged by the success attending this, I determined to try it in other cases, some of chronic bronchitis, the majority of phthisis. In all I have found it most useful in allaying cough, and checking secretion and expectoration. By allaying the cough, and thus increasing the comfort of the patient, it seems in some degree to increase the strength; at any rate, it saves its diminution. It does not of itself appear to possess any curative power. As a palliative, it is useful in all cases; and I have heard it spoken of most gratefully by a patient who only lived to use it for three or four days.

The mode of using it is very simple. I direct from four to ten drops of creosote to be placed in the bottom of an old teapot, and a small quantity of boiling water to be poured over it. The spout is to be protected by a piece of flannel, and the steam inhaled through that until it begins to feel cool. Care must be taken, of course, not to put too much water in. This answers well enough in poor practice. In hospital and private practice, more elegant apparatus may be used. An inhaler made by Weiss answers remarkably well. It consists of a closed tin can, holding about three pints: at the top are two large tubes, which communicate with the interior; one is furnished with an ivory mouth-piece, to prevent the lips being burned by the hot metal; the other is turned upwards, and, through this, the creosote and water are readily introduced. The size of the tubes makes the inhalation of the steam peculiarly easy. When this is employed, I find that the temperature of the water should not exceed 150°. The immediate effects are, a feeling of warmth about the throat, and a sensation "as if you had lungs under your ribs," followed by reduced irritability of the mucous membrane, and, subsequently, by evidence of the creosote having entered the blood.

It would take up too much space were I to detail all the cases in which I have employed it in hospital and private practice; one will suffice, and will serve to indicate the routine treatment I have adopted in phthisis.

A. B., seaman, aged 30, was admitted into the Northern Hospital with severe cough, dyspnœa, and profuse expectoration. He had been ill for three months, during which he had emaciated considerably. The pulse was 130, and there were copious night sweats. On examining the chest, I found solidification of the apex of the left lung, and coarse mucous râles all over the same side, both anteriorly and posteriorly. At the apex of the right lung there was tubular breathing in one spot, and prolonged expiration in another. The expectoration was of thick, semi-transparent mucus, free from air-bubbles, and mixed here and there with grey tubercular patches. He was ordered to have creosote inhalation three or four times, and to take internally half an ounce of cod-liver oil, with twenty-five minims of tincture of iron, three times daily. The severity of the symptoms abated in the course of a week, and, in six weeks, the man was convalescent. The right lung now seems perfectly healthy; all traces of solidification have disappeared from the apex of the left; the respiration there, and over the whole of that lung, has become natural. The pulse has come steadily down to 72. The man has gained flesh, and the capacity of the chest, as evidenced by the power to take in a deep inspiration, has signally increased.

I may mention, that the use of iron has been adopted in consequence of the effect it had on a little girl, who had been previously employing creosote inhalation and cod-liver oil for some weeks without any indication of improvement. In her case the whole of the left, and the upper part of the right lung were implicated; but I could not detect any cavities. The case seemed hopeless, when she began with the tincture of the sesquichloride, in addition to her other medicine. In two days an improvement was seen; in four it was confirmed; and, in less than six weeks after, she was running about the wards rosy and well, and has continued so up to the present time—about two months more.—*Med. Times and Gazette, May* 14, 1853, *p.* 507.

39.—ON THE USE OF CHLOROFORM IN HOOPING-COUGH.

By Dr. Fleetwood Churchill.

[Dr. Churchill remarks that previous to the introduction of chloroform into medical use, he had tried sulphuric ether as a remedy for hooping-cough. Both this and chloroform have an undoubtedly good effect in allaying the violence of the paroxysm, but the objections are, that in children the attack is so sudden that it is difficult to have the chloroform in readiness, and that they have such a horror of anything being applied over the mouth, that the resistance met with prevents its taking effect. The following cases, however, illustrate its value in patients above 14 years of age.]

Case 1. Miss D., æt. 16, had had hooping-cough a month, when I prescribed chloroform. There was no complication, but the hooping was frequent, especially during the night. She was directed to have the chloroform in readiness, and to use it with each paroxysm, and she assures me that in two days the hoop ceased. The cough lasted a few days longer, but it was slight and not in kinks.

Case 2. Miss A., æt. 20, had been ill with hooping-cough for about three weeks, when I prescribed chloroform. The cough was not very frequent, and there was no complication. Two days sufficed with her also to relieve her of the hoop; and the slight cough which remained subsided after a week or ten days.

In these two cases the effect seemed quite magical; both had the disease well marked, and the families of both were prepared for a disease of two or three months' duration, as was the case with their other children.

Case 3. Miss B., æt. 18, took the complaint from her brother, whom I was attending, and I therefore had an opportunity of giving chloroform from the commencement. She did not hoop any time she coughed; but she was directed to use the chloroform whenever she felt the tickling in the larynx, without waiting for a cough. By doing so, she found that she could postpone the cough indefinitely, and if it came on suddenly, the use of the chloroform instantly suspended it. About three weeks elapsed before the tendency to cough and the use of chloroform ceased; but during that time she lost neither appetite nor flesh. She slept well, was in good spirits, and able to follow her usual occupation. She went to the country quite well.

Case 4. Master B., æt. 16, the brother of the last case, when I first saw him, had the disease most severely. The kinks were violent and prolonged, the efforts to inspire and the hoop excessive; it really seemed as if he would be choked or that something would give way. He had lost appetite, sleep, and spirits, although the disease had not lasted three weeks when I saw him. I tried chloroform with him, and it at once reduced the number of paroxysms one half, but without mitigating them when they did occur. He took the chloroform very freely, and as he was not readily influenced by it, the quantity seemed to give him a headache, and he begged to be allowed to suspend its use. I the more willingly agreed to this, as he had a severe attack of diarrhœa. I therefore substituted two drops of prussic acid (Dub. Pharm.) with two or three of black drop three times a day. The improvement, begun under chloroform, continued under this treatment, and at the end of five weeks from the beginning of the disease the cough had ceased, and he had regained rest, spirits, and flesh.

Although this last case cannot be regarded as cured by chloroform, the paroxysms were first diminished by it, and I have no doubt that it contributed to the beneficial effect of the prussic acid. The three first cases are, I think, very conclusive as to its value; and, if further experience confirms them, we shall possess a means of cutting short this disease in adults, who, when attacked, suffer so severely.

One word as to the mode of exhibition. In order to avoid the possibility of an overdose, I have never given the chloroform on a handkerchief or by means of an inhaler, but have directed the mother (in the case of young children) or the patient to spill a little, say about thirty drops, in the palm of the hand, and hold this before the mouth and nose sufficiently near to inhale it fully, but not so close as to exclude a portion of atmospheric air. The best time to begin is just as the patient feels the irritation in the chest increasing to a cough, but if possible before the cough commences, and the inhalation should be repeated with each return of irritation, unless headache be produced.—*Monthly Journal of Med. Science, August*, 1853, p. 180.

40.—ON THE TOPICAL TREATMENT OF HOOPING-COUGH.

By Dr. Eben Watson, A.M., Professor of the Institutes of Medicine in the Andersonian University, Glasgow.

[Dr. Watson considers that in this disease some morbific agent first induces inflammation of the pharyngeal and bronchial mucous membrane; and, secondly, irritation of the pneumogastric nerves. The difference between this disease and bronchitis being that, in the latter, the irritation is weaker, merely producing the expulsatory effort termed a cough; while in the former, it is so intense as to produce, again and again, a spasmodic closure of the glottis, whence the peculiar phenomena of the disease. Dr. Watson, further, is of opinion that if we can remove these conditions by any kind of treatment—the poison being eliminated—we prevent its reproduction. He then observes:]

Let us now consider shortly in what way the solution of caustic, applied to the interior of the pharynx and larynx, acts in curing the local effects of the poison of hooping-cough. M. Joubert seems to think that the topical remedy only affects the inflammatory state of the mucous membrane, and the excessive secretion of mucus which results therefrom, and to which he attributes the spasmodic element of the disease. I have not been able to see his memoir, which is published in the 'Recueil des Travaux de la Société Médicale de l'Indre et Loire, 1er et 2de trimestre de 1851;' but the following passage sufficiently indicates his opinion. "M. Joubert n'a pas, du reste, été conduit à employer ce traitement dans la coqueluche par le désir de modifier l'élément spasmodique en agissant sur les nerfs qui se distribuent aux voies respiratoires, mais seulement par l'idée théorique de modifier la disposition en vertu de laquelle s'opère la sécrétion morbide, à la présence de laquelle il attribue la toux convulsive." (Bulletin Général de Thérapeutique, tome xlii. p. 41.) Now, as the only disposition in the mucous membrane which determines the secretion is its inflammatory excitement, so it is upon that alone that M. Joubert considers the topical remedy to act. Nor do I seek to dispute the fact that such an action is effected, nay, that it is *first* effected in every case of hooping-cough in which the topical treatment is employed. But if the case be well watched, it will be found that, after the inflammation of the pharyngo-laryngeal mucous membrane is subdued, and after the expectoration has diminished in amount and bulk, the hoops continue, though, in general, they are less frequent and less severe. In most cases, the remedy must yet be continued for a short time before the cure can be accounted complete. When, however, the inflammation of the larynx or trachea happens in any case to be peculiarly severe, the cure by topical means is always postponed for a longer time than usual; and this would seem to show that the nervous or spasmodic element seldom gives way before the inflammatory.

Not long ago, I treated two children in the same family, who were attacked at the same time by the hooping-cough. The one was a baby at the breast, and was very severely affected, insomuch that his life was for a time in danger. I began the topical treatment about the middle of the spasmodic stage; and in eight days he had ceased to hoop, and in a short time to cough at all. His sister, the other patient, was about two years and a half old, and apparently much less severely affected with the hooping-cough; but she had just recovered from an attack of croup when she was seized with that disease, and at first her cough had much of the croupy sound. I treated her *pari passu* with her brother, and yet her disease continued two weeks longer than his.

On the other hand, I have known of cases irregularly treated by the topical method, in which the inflammatory element was subdued, and in which the hooping continued, though in a mild degree, for a considerable time longer. But the most convincing proof that the solution of caustic has a decided and sedative influence on the spasmodic element of hooping-cough, or, in other words, on the excited state of the extreme branches of the vagi nerves in the throat and larynx, is the fact, which my experience demonstrates, that the topical plan is most speedily effectual in the last stage of the disease, when all the previous symptoms of inflammation have disappeared, and the hoop alone remains. I have seen a number of such cases, in which the children seemed worn out by the disease, and in which general remedies had been long but vainly employed. In all these cases, the very first touch has a markedly

beneficial effect; and its repetition for a comparatively few times suffices to perfect a cure.

When, however, we remember how much the nerves of any part are implicated in its inflammation, it may be, after all, that the affection of the pharyngeal and bronchial nerves, which occasions the spasmodic paroxysms of hooping-cough, is of the same nature; and that we are warranted in agreeing in the main with M. Joubert, that the topical application of solution of caustic operates solely in subduing inflammation. Since, then, that morbid state exists in the bronchial mucous membrane as constantly in cases of spasmodic asthma as in those of hooping-cough, the rationale of the topical remedy becomes reduced to the counteraction of only one morbid state; and we may call it an antiphlogistic sedative of the pharyngo-laryngeal mucous membrane. But this, in my opinion, can only be said with truth of the less sthenic degrees of inflammation, as I have explained in another paper ('Dublin Quarterly Journal of Medicine,' August, 1852). The practical rule, however, remains importantly true, that the remedy should be continued so long as the slightest hoop is heard, although all the ordinary symptoms of inflammatory action, such as bronchitic râles or bulky expectoration, have been subdued for some time. If this rule is not strictly attended to, a relapse will ere long be the consequence; and the treatment will have to be continued nearly as long as if it had never been commenced at all. But if the disease be thus thoroughly subdued in its first attack, no recurrence of it need be apprehended during the patient's life. I make this statement in full knowledge of the succeeding history of all the cases in which I have employed the topical treatment; and many of them have been again freely exposed to infection.

Regarding the mode of prosecuting this topical treatment, I may now be allowed to make a few remarks, suggested by the statements or objections of other physicians, which I have either read or heard expressed in conversation.

1. The most convenient instrument for applying any solution to the throat or larynx, is the sponge and whalebone. The forceps suggested by Dr. Cotton, and which has one limb covered with sponge, is needlessly complicated, and much more apt to injure the delicate glottis. Nor is it fitted to obviate the supposed danger of the detachment of the sponge in the windpipe of the patient, which gave rise to the idea of Dr. Cotton's instrument at the first. It is, indeed, quite a mistake to think that there is any strain upon the sponge, when once it is within the larynx. That organ cannot contract so as to detain the sponge; and it must have been very carelessly fixed on the whalebone, if the glottis could detach it during its withdrawal. Indeed, a skilful operator will seldom feel the contraction of the glottis at all; for, as the patient inspires immediately on the introduction of the sponge into the larynx, the muscular valve becomes relaxed, and permits its easy withdrawal. The strong contraction which I have myself often felt, and which I have known many to mistake for that of the glottis, is in reality a proof that the sponge is not in the windpipe at all, but is caught by the pharynx immediately behind it. And this gives colour to the amusing story of the musician whose larynx was being touched by a learned physician, who, on withdrawing the whalebone, found it destitute of the sponge. The physician was in great alarm; but the patient neither choked nor died. Ere long, however, he vomited the sponge from his stomach. It had been caught by the pharynx, and swallowed.

If the instrument is at all well made, this could never happen, except from one circumstance, which ought to be known by every person who attempts the topical treatment of the larynx, especially among children. It is, that the caustic solution in a short time destroys the thread with which the sponge is fastened to the whalebone. The simple and certain way, then, of avoiding any such accident as that to which I have been referring, is to have the sponge frequently renewed.

2. The ordinary strength of the solution which I have used in the treatment of hooping-cough, is gr. xv. of the nitrate of silver to the ounce of distilled water; but, in some cases, I have with advantage increased it to ℈ij. of the salt in the ounce of water. From an enlarged experience of the treatment in question, I can now be still more precise; for I have found that in the early stage of the disease, and just in proportion to the intensity of the inflammatory process which may be present, so ought the solution employed to be proportionally *weak*. Afterwards, when the nervous symptoms preponderate, the solution may with advantage be strengthened; but it is impossible to lay down rules that will universally apply to different cases,

or even to the same case on different days. This must be left to the judgment of the practitioner; and he will find it quite necessary, for the favourable progress of the case, that he should use his discretion in regard to it, as much as to the administration of emetics or laxatives.

3. Dr. Scott Alison has lately drawn the attention of the profession to the application of several other substances to the larynx; and perhaps some of them, such as solution of morphia, may be occasionally used with advantage in cases of hooping-cough. I merely make this as a suggestion; but I have, from some little experience of its effects, a better founded opinion of another substance, which has not hitherto, I believe, been used as a topical application to the larynx. I refer to the hyposulphite of soda and silver, to which my attention was first directed by a notice in the 'Medico-Chirurgical Review' (No. xxii., p. 567). This salt has a very soothing effect on the larynx when its lining membrane is irritated by a vitiated, and, as is generally the case, an acid secretion; and I entertain the hope that its solution will form a useful topical application in the first stage of hooping-cough. I intend, however, in due time, to lay before the profession a fuller account of a trial, which I am at present making, of the value of this salt in laryngeal cases.

4. In some cases of hooping-cough, an obstacle is presented to the topical treatment by a state of matters which is, in other respects, by no means unfavourable to the patient. I mean the irritability of his stomach, which makes the slightest touch of the sponge in the throat the signal for violent retching and vomiting, if the stomach be full. I very often, therefore, find it necessary to prescribe for this symptom frequent small doses of heavy magnesia, combined sometimes with a few grains of the trisnitrate of bismuth. Such simple treatment seldom fails to mitigate the vomiting sufficiently to admit of the continuance of the topical applications.

5. These applications should be renewed at least every second day; but, if their commencement has been delayed till the disease is at its height, or if the hoops are very violent from the first, they should be repeated more frequently; and, for the reason stated above, the time of making them should be selected so as to have the stomach empty; and the patient should not be allowed to eat for an hour or two afterwards, else the feeling of rawness in the throat which follows each application of the remedy will be unnecessarily increased, and occasionally hooping and vomiting will be induced.

6. In making these applications of solution of caustic to the throats of children, everything in the shape of a formidable spatula should be dispensed with, and either a common teaspoon, or the index-finger of the left hand, should be used. In all cases in which it is important to pass the sponge into the larynx, I consider it quite necessary to introduce the finger into the patient's mouth, and to touch with it the tip of the epiglottis, along the surface of which the instrument may be glided down with certainty to the rima glottidis. And if this proceeding be performed at once with firmness, few children either can or will resist it by struggling, or by biting the operator's finger; but much patience and tact is sometimes necessary to school them to submission in the beginning of the treatment. After a few times no more trouble is experienced.

Pursued in this way, with these precautions, and with a prudent attention to the diet and regimen of the patients, the topical treatment of hooping-cough wonderfully shortens the disease, and renders it nearly as mild as ordinary catarrh. Complications seldom occur, and thus the disease is stripped of its most formidable characteristic.—*Association Med. Journal*, Aug. 26, 1853, p. 750.

41.—*Treatment of Aphonia.* By Dr. Bennett.—In cases of aphonia dependent on chronic inflammation of the fauces and larynx (not tubercular), the treatment by means of a strong alcoholic solution of iodine (3j. to ℥j.) painted very freely over the throat, externally, has appeared to be extremely successful. The cases which we have especially observed have been under Dr. Bennett's care; and in some of long standing this form of counter-irritation has seemed to be very superior to that by blistering. In the class characterised by a thickened and mammillated state of the pharyngeal mucous membrane, although the iodine is still useful, yet the topical application of a solution of the nitrate of silver is also and more especially indicated. —*Med. Times and Gazette, July* 23, 1853, *p.* 90.

42.—CASE OF LARYNGEAL DISEASE, IN WHICH THE OPERATION OF TRACHEOTOMY WAS PERFORMED.

By Henry Smith, Esq., Surgeon to the Westminster General Dispensary.

[Mr. Smith was summoned to a gentleman on the evening of March 11, as it was anticipated some operation might be required to relieve the obstruction to the breathing produced by an attack of laryngitis. Mr. Hunt, the family surgeon, had applied the usual remedies, but the case becoming more urgent, Dr. T. Thompson was called in. On consultation, although it was considered scarcely prudent to operate at that time, yet it was deemed advisable that Mr. Smith should remain near the patient, lest it should suddenly become requisite. Mr. Smith says:]

At four o'clock on the following morning, I was hastily called to the patient, and found him in the middle of a severe spasmodic seizure, the distress of breathing being very urgent. A sinapism relieved this for a time, but the symptoms shortly returned, and at six another terrible attack of dyspnœa occurred. During this the patient was compelled to sit bold upright in the bed, and his distress was evinced by the forcible extension of the arms, clenching of both fists, by the lividity and anxiety of the countenance, and the urgent endeavours to get air. I applied water as hot as could be borne by means of a sponge to the throat, but this did not give any relief; and it appeared to me that it would not be justifiable to delay the operation longer; accordingly, I dispatched a messenger for Mr. Hunt and Dr. Thompson. During the time he was gone, the distress of the patient became so urgent, that his wife implored me to operate at once. On their arrival, the spasm had, in a measure, abated, but it was considered that it would not be safe to expose the patient to another of these fearful attacks; accordingly, the operation was determined upon. It was my wish that some chloroform should be inhaled by the patient, and Dr. Thompson cautiously administered that agent, but its influence was different to what was expected; insensibility was not produced, and the respiration, instead of being tranquillised, became more laborious, frequent, and spasmodic; the face became more livid than it was before; the muscles of extraordinary respiration were thrown into violent action; the sterno-mastoid on each side stood out in bold relief, thereby deepening the fossa of the neck. Without delay, I cut deeply through the tissues over the lower part of the trachea, separated the muscles with the point of the finger, made a hit at the tube, and fortunately opened it in the middle line without wounding any vessel of importance. Some mucus and blood obstructed the opening at first, and, for a few moments, the patient appeared to be in a most critical position; the pulse sank, the face became livid, and the respirations almost entirely ceased, but cold water was dashed violently over the chest, and the orifice in the trachea was kept patent by the handle of the scalpel. In a short time the breathing became more free, and in a few minutes the alarming symptoms went off, and I was enabled to insert an ordinary silver canula, upon which the relief was immediate. I do not think that more than half a minute elapsed from the time the operation was commenced until the incision was made into the trachea.

During the day the relief continued most striking; the patient even became jocose. He partook freely of beef-tea and wine. A grain of calomel was given every four hours, and a full opiate was exhibited at night. About four A.M., on the 13th, the patient, after having been calm, hastily jumped out of bed before he could be restrained, had a copious evacuation from the bowels, which had been acted upon by the calomel several times, with difficulty got back into bed, and rapidly became delirious. He tossed about from side to side, the brow became fiercely knitted, the eyes stared wildly, and he dashed me away from him with all his strength, and appeared to be rapidly sinking. I examined the tube, and finding that the air did not readily enter, passed a probe through it, and brought away a pellet of hardened mucus, when these distressing symptoms subsided, the delirium ceased, the patient became calm, and shortly fell asleep. At six, Dr. Thompson and Mr. Hunt joined me, and the patient continued pretty well; but just as we were about to separate, another seizure of the same description, but less distressing, occurred; the tube was again examined, and another pellet of mucus was removed. Air entered pretty freely, but it was evident that there was obstruction, and it now became a question as to whether the tube should be removed or not. I was somewhat fearful, from

previous experience, that if the tube were removed, there would be a difficulty in re-inserting it, and that in the critical state of the patient, he might be destroyed if any such difficulty should present itself; the other gentlemen felt the same; therefore I requested the opinion of Mr. Fergusson. Before this gentleman arrived, the patient had again become better, had fallen asleep, and awoke sensible, and stated that he felt more comfortable. However, Mr. Fergusson, on carefully examining the patient, considered that it was necessary to remove the tube. It was therefore taken out, and on examination was found to be partially blocked by viscid mucus. Fortunately another was inserted without much difficulty, care being taken to keep the edges of the opening in the trachea apart by means of blunt hooks. The breathing now became quiet, and the countenance lost its livid appearance; but another source of danger presented itself; for within the last few hours excessive swelling of the upper part of the neck had come on, and an erysipelatous redness was diffusing itself over the chest below the wound. Large quantities of wine, beef-tea, and chloric ether were given, and the patient was most assiduously watched. A stick of nitrate of silver was drawn over the margin of the inflamed skin. The calomel was omitted.

14th. The patient had some nice sleep during the night. The countenance is more natural; the erysipelas has not spread beyond the line of the nitrate of silver; there is a great deal of irritating cough, and a considerable discharge of mucus from the wound. At mid-day, the patient had a sudden attack of difficulty of breathing, which rendered it necessary to remove the tube; it was cleaned and re-inserted, upon which the breathing became calm, and the irritation was lessened. Beef-tea, wine, and other stimulants are freely given.

15th. After taking a dose of laudanum last night, he had some sleep; and this morning he feels better. Pulse 100, full, and soft; respirations easy, eighteen in the minute; tube cleaned and re-inserted.

16th. Not so well to-day; there have been violent paroxysms of cough, and an immense discharge of purulent matter from the wound; he consequently passed a bad night, and is irritable and depressed. The erysipelas has again begun to spread over the chest, and has reached the right axilla. The tube was removed from the trachea, and left out for a short time, and the irritating cough ceased; tube cleaned and re-inserted; opium, wine, and beef-tea are freely given.

17th. Slept pretty well occasionally during the night, but the paroxysms of cough have been frequent and violent, and the discharge of matter from the wound is larger in quantity, thinner, and slightly tinged with blood. Tube to be removed and kept out, and the edges of the wound to be kept apart by two bent probes, tied behind the neck. Erysipelas stopped by the nitrate of silver.

18th. Passed a better night; breathes freely through the opening without the tube; on closing it with the finger, great distress is produced, and he can only take a few inspirations by the natural passage; pulse 80.

19th. I was called to this patient in the middle of the night, and found him in a distressing state of dyspnœa,—indeed, as bad as before the operation. On examination, I found that the opening in the trachea was almost entirely blocked up by thick mucus. This was cleared away; the patient was immediately relieved, and he has, for the first time, this day taken some solid food. He is assiduously watched night and day.

20th. Again I was hastily summoned, late last evening, as another attack of dyspnœa had come on. On my arrival, I found the patient better, but ascertained that he had been nearly suffocated, and that he would probably have died, had not a relation, who was a medical man, been in the house, and cleared the wound, which had become blocked up. It being evidently unsafe to dispense with the tube, I re-introduced it, and gave a large dose of laudanum. The patient's mind was at once tranquillised.

22nd. He has been progressing favourably since the tube was re-introduced, but there has been considerable tracheal irritation, and, therefore, it was left out the whole of yesterday; but to-day, the tracheal irritation, which had considerably lessened when the tube was removed, again came on; consequently, I re-inserted it, and the irritation ceased at once.

Yesterday he sat up for an hour. As there is evidently considerable thickening about the larynx, hyd. cum cretâ is given in doses of three grains every four hours.

25th. Has been progressing favourably; is getting up his strength; sits up three or four hours daily; mouth is affected by mercury; can breathe more freely by the natural passage; the tube is cleaned and re-inserted every day.

April 8. It is now a month since the operation; the patient is so much better, that he breathes pretty comfortably for at least ten minutes together when the opening is closed; but the tube cannot be dispensed with, as the noisy sound in the breathing indicates considerable narrowing at the entrance of the larynx. Counter-irritation, by means of blisters and croton oil, has been employed, and the patient, being weak and nervous, takes quinine thrice daily.

20th. As regards general health, this patient may be deemed convalescent, as he has regained his strength and flesh to a considerable extent; but the remains of the disease in the larynx still persist, and render necessary the use of the tube; for, although he can breathe a considerable time together with the opening closed, the respirations are noisy, and soon become laborious. In order to permit of more easy breathing, a tube has been constructed, with a very large opening on the convex surface, and, at the same time, a stopper has been made to fit in the anterior opening; by this means the patient can close it at will, and the air passes more readily in and out of the lungs than it would if there was simply a tube in the larynx, without an opening on its upper surface. He exercises his breathing in this way for some time together, and gets more confidence. We are keeping up a little counter-irritation over the throat.

May 1. This patient has been enabled to take carriage-exercise continually, and has been doing well until the last few days, when he has been thrown back in consequence of a domestic misfortune. The tube is worn with great comfort. There is occasionally a considerable secretion of thick pellets of mucus from the trachea. Dr. Thompson has carefully inquired into the condition of the larynx by means of the stethoscope, and is of opinion, from the noisy sound heard during respiration over the glottis, that there is still considerable narrowing at the entrance of the tube; consequently it has been determined to put the patient fully under the influence of mercury again; accordingly he is taking it twice daily.

25th. He was brought fully under the influence of mercury, and the gums were kept sore for some length of time; but the disease in the larynx has not been removed by it, only somewhat lessened. The mercurialisation had the effect of weakening the patient very much; it also was followed by severe periosteal pains. The patient has, during the last month, been enabled to attend to his business. A respirator is worn over the tube, and his neckerchief is so adjusted, that its presence cannot be detected by ordinary observers. He has now retired into the country to spend the summer, and it is hoped, that, in course of time, the remains of the thickening, which undoubtedly exists in the larynx, may gradually be removed, and thus permit the entire disuse of the tube, which could not at present be dispensed with. I must not omit to state, that a very careful examination of the lungs has been made on several occasions, and that there is not any evidence of disease there. The chest expands well, even when the artificial opening is closed.—*Med. Times and Gazette, July* 9, 1853, *p.* 34.

43.—ON THE PATHOLOGY OF PHTHISIS.

By Dr. Cornelius Black.

[The following is an abstract of Dr. Black's researches into the pathology of pulmonary consumption:]

Assuming that the first substantive deflection from the standard of perfect health is in a deficient vitality of formative elements of the blood, the origin, manifestation, and progress of pulmonary consumption are briefly enunciated in the following propositions:—

1. That pulmonary consumption observes three stages.
   - *a.* The stage of Local Predisposition.
   - *b.* The stage of Deposition.
   - *c.* The stage of Germination.
2. That the stage of local predisposition is characterised by more or less excess

of blood in the pulmonary capillaries of the affected part; that it corresponds to the first pathological condition of bronchitis and of pulmonary cellulitis; that the degree and extent of this local predisposition vary considerably; and that the resulting phenomena bear a proportionate ratio in point of severity and appreciability.

3. That the stage of deposition is attended by increased exudation from the pulmonary capillaries; that this exudation is incapable of entering into structural relation with the pulmonary tissues; that it leads to a more or less rapid thickening of the basement structure of the bronchio-pulmonary membrane; that it likewise accumulates in the intervascular and intercellular spaces; and that the pulmonary tissue is thereby more or less consolidated.

4. That the first appreciable sign of the stage of germination is a shedding of the epithelium of the affected portions of lung; that this epithelium does not attain perfect mucus-cell development; that in cases in which the deposition has been slow, it (the epithelium) is more granular than are properly developed mucus-cells; but that the epithelium is still more granular in cases of rapid turbercular deposition.

5. That the epithelium thus shed is not, in progressive tubercular disease, replaced; that, so long as a particle of healthy basement structure exists, the nuclear points of that structure attempt to replace such lost epithelium; but that this properly vitalised basement structure failing before such attempt at the restoration of the epithelium has succeeded, the latter is now cast off in the form of basement patches, which show, here and there, a germinating point.

6. That the tubercular deposit undergoes, during germination, more or less development into cells; that this growth constitutes the "softening" of authors; that it takes place contemporaneously throughout each isolated and individual mass of tubercle; that it, therefore, does not first commence at either the centre or circumference of the exudation; but that it proceeds more rapidly at the circumference, because at this point the conditions of cell growth are more abundant than at the centre. At the circumference, therefore, plastic and pus-cells abound; at the centre exudation cells.

7. That in the cheesy-looking portions of tuberculous sputum there are very frequently, indeed, portions of nerve tubes, and occasionally of lymphatic vessels and of the minute bronchi; that, in other portions of such sputum, plates of cholesterine, the colouring matter of the bile, cystine, and urate of ammonia are occasionally seen by the microscope.

8. That the microscopic appearance of the nerve tubes thus expelled shows that the nerves do not terminate in loops upon the pulmonary mucous membrane, but in bulbous expansions, to be hereafter depicted.

9. That the foregoing observations show pulmonary consumption to consist in anormal nutrition, and to be essentially analogous, in its steps, to inflammation; but that the term "inflammation" would be inapplicable to it, inasmuch as it fails to explain the cause of the deficient vitality of the blood-plasma, which constitutes the essential nature of tubercle.—*Association Med. Journal, Sept.* 9, 1853, *p.* 799.

DISEASES OF THE ORGANS OF DIGESTION.

44.—ON THE CHEMISTRY OF DIGESTION.

By Dr. G. E. Day.

[Our readers can hardly fail to appreciate the following elaborate review of Professors Bidder and Schmidt's work on 'The Digestive Fluids and Metamorphosis of Tissue,' and of Dr. Carpenter's 'Food and the Digestive Process,' by Dr. G. E. Day, the esteemed professor of medicine at St. Andrew's. Of the different secretions employed in the digestive process, that of the salivary glands comes naturally to be considered first. The principal use of this would appear to be to promote the conversion of the *amylacea* into dextrine, sugar, and lactic acid, and thus promote the absorption of this class of foods.]

The first point we shall notice is the time required for the metamorphosis of starch by human saliva (the mixed secretion). If we take a fresh decoction of starch, prepared with distilled water, and proved by Trommer's test to be free from sugar, and

if we mix it with an equal quantity of fresh saliva, and agitate the mixture, it will instantly lose its viscid character, and become thin and watery; on testing a small quantity of it for starch, we find that iodine no longer induces the well-known reaction, while, on the other hand, the rapid reduction of oxide of copper (in Trommer's test) affords indisputable evidence of the presence of sugar.

The almost instantaneous induction of this action is a point which must not be overlooked, in considering the question whether this is a special property of the saliva, or whether it is shared by other animal fluids. There can be no doubt, as we shall presently show, that in this respect the pancreatic and the intestinal juices exactly coincide with the saliva; but when we find stress laid upon the circumstance that many organic substances—as, for instance, nasal mucus, pieces of kidney, putrefying serum, &c.—produce similar changes in eight or twelve hours, at 100° or upwards, we may recollect that at such a temperature, and after so long an interval, changes may be spontaneously set up in a solution of starch. There are, however, a number of animal substances which occasion the appearance of sugar in a solution of starch, in so short a period as altogether to exclude, in such cases, the suspicion of spontaneous metamorphosis; but the action induced by the saliva is incomparably more rapid even than that of any of these substances.

[We may ask, are the secretions of the three sets of salivary glands of equal importance in producing the final result?]

The following are the two principal conclusions at which Bidder and Schmidt have arrived in connection with these points:

1. They agree with Bernard in regarding the parotids as *glandes aquipares*; in short, as yielding a secretion which is unquestionably intended to moisten and saturate the dry food, but whose principal object is connected with the general metamorphosis of the fluids within the body, and which is devoid of any marked action on starch.

2. By the union of the submaxillary secretion and that of the buccal mucous membrane, there is formed that peculiar ferment which almost instantaneously converts starch into sugar. This active principle is not contained in the cells or other solid particles suspended in the saliva; for the filtered fluid exhibits an undiminished force; and, indeed, this property is not destroyed when, by the addition of a little alcohol, we precipitate the mucus and (entangled in it) these solid particles.

There is still considerable obscurity and diversity of opinion regarding the question, whether the action of the saliva on starch is continued in the stomach. Jacubowitsch, Frerichs, and Bence Jones believe the metamorphic process is continued in the stomach, and Lehmann and Carpenter support this view, while the experiments of Bidder and Schmidt lead to an opposite result.

[It would appear from these experiments that starch should be rapidly converted into sugar in the stomach; but in animals, where it has been introduced artificially, the result has afforded a conclusive demonstration that no conversion into sugar takes place in this organ.]

Now, seeing, in the first place, that the formation of sugar commences in the mouth immediately upon the starch coming in contact with the saliva, and further bearing in mind that no sugar can be usually detected in the stomach, it follows that one of two things must occur—either that the newly-formed sugar is at once absorbed, or that it is converted into lactic acid, and in this form mixes with and is lost in the gastric juice. In the latter case, we must ascribe to the gastric mucous membrane the power of instantaneously converting sugar into lactic acid—a power which, as we learn by experiments, is possessed neither by the stomachs of herbivora or carnivora; in the former case, we can only say, that so rapid an absorption is perhaps the least improbable mode of explanation.

We are bound to remark, that the above opinion of Bidder and Schmidt, regarding the absence of sugar in the gastric contents of animals fed upon starch, has not met with universal acceptation. It is true that it is in accordance with views previously expressed by Blondlot, and by Bouchardat and Sandras, but it is opposed to the results obtained by Frerichs (who "in at least fifty experiments" constantly found sugar in the filtered contents of the stomachs of men, carnivorous and omnivorous mammalia, and birds), and to those of Jacubowitsch.

The secretion of the *glandular apparatus* imbedded in and forming the chief bulk of the mucous coat of the *stomach* next claims our attention. Many of our best

recent observers (amongst whom we may especially mention Hübbenet, a pupil of Bidder and Schmidt's) believe that two perfectly distinct secretions are found in the stomach—namely, the true *gastric juice* and *gastric mucus*. Almost all observers since Beaumont have agreed in describing the former as a clear aqueous or only slightly viscid fluid, with a strong acid reaction, and devoid of morphological elements —that is to say, of *essential* morphological elements; for on a microscopic examination, a few solid particles, consisting partly of unchanged cells of the gastric glands, partly of the nuclei of these cells, and partly of fine molecular matter, which is produced by the disintegration of these elements, may usually be observed; it is only secreted during the period when digestion is actually going on, and it is this fluid alone which possesses any true digestive power. All that is known of the latter (the mucus) is, that it accumulates in the empty stomach, that it is neutral (unless when slightly alkaline from the commixture of saliva), and that it exerts no solvent action on the protein compounds. Frerichs, however, whose views on the Chemistry of Digestion are entitled to the highest respect, holds a different view, and maintains that at the commencement of each act of digestion the round cells in the interior of the glands escape in excessive quantities, and form a stratum of about a line in thickness, which has been hitherto regarded as mucus, and which either invests the interior of the stomach, or surrounds the contents in the form of a white membrane, the latter being especially the case when dry food is taken. The gastric cells become gradually disintegrated during the continuance of the digestive process, and thus afford a continuous source of pepsin or ferment. The digestive act being accomplished, the gastric glands collapse, and in that state no nuclei or cells, and only a few scattered granules, escape from them. During abstinence from food, the morphological elements are again perfectly formed, and the tubes become filled with cells, which probably in very prolonged fasting again become disintegrated.

There are two points in connexion with the secretions of the gastric mucous membrane to which Kölliker has directed special attention, and which we will now lay in a condensed form before our readers.

The first is, that *in many of the mammalia the gastric mucous membrane is covered with a more or less thick coat of mucus during digestion.* This fact was originally noticed by Eberle in the stomachs of rabbits, and he clearly regarded the mucus as essential to digestion.

[The gastric mucus can scarcely be regarded as essential to the digestive process, except that it may possibly exert a peculiar influence in certain parts of the stomach. The gastric juice is acid, unless there be an excess of mucus, when it may be neutral, or when a large quantity of saliva is swallowed, when it may be alkaline. It contains a free acid, a highly nitrogenised matter, termed 'pepsin,' or, more recently styled, 'ferment substance.' It is perfectly astonishing how enormous have been the labours of these indefatigable labourers, MM. Bidder and Schmidt. They have recorded no less than 45 series of experimental inquiries, embracing 140 individual experiments.]

Their experiments lead to the following conclusions:—

The admixture of saliva with the gastric juice is of no service, in so far as the solution of albuminous bodies is concerned. It appears, that in experiments with gastric juice containing saliva, the number expressing the dissolved per centage of dry albumen was not so high as in corresponding experiments (both sets of experiments being made within the stomachs of dogs) when the saliva was excluded. Whilst in the latter the averages of nine experiments of two hours', nine of four hours', and nine of six hours' duration were 29, 62, and 76 per cent., in the former they were only 26, 45, and 65 per cent. This difference is unquestionably dependent upon the partial neutralisation of the free acid of the gastric juice by the saliva.

Both classes of experiments agree in showing that the acid gastric juice possesses a specific and peculiar power of dissolving coagulated albumen; and if this solution proceeds with more rapidity in the stomach than externally to the organism, the reason is, that in the former the albumen is kept in constant motion, and is being always brought into contact with fresh quantities of gastric juice. Several of Bidder and Schmidt's experiments show, that provided a sufficient quantity of pepsin be present, the digestive power of the gastric juice varies in a direct ratio with the amount of free acid that it contains. That the solvent power of the gastric juice is not solely due to the presence of hydro-chloric acid is, however, evident from

the results of several experiments, which showed that this acid, in a diluted state, could only, at the most, exert one-fourth part of the solvent action on coagulated albumen which was exerted by the gastric juice itself. The neutral or alkaline gastric mucus of fasting animals dissolved only very slight quantities of albumen, but on adding hydrochloric acid the activity of the fluid was at once augmented. On neutralising the free acid of the gastric juice with potash, its digestive power is destroyed.

With regard to the effects of filtration, they observe that repeated experiments have convinced them that gastric juice from which all undissolved organic matters have been separated acts with the same efficiency as that which has not been filtered. This is obviously at variance with the view held by Frerichs, that new ferment continues to be developed from the cells contained in the gastric juice by the action of the free acid.

The experiments on concentrated and diluted gastric juice led to no definite result: indeed, no experiments seem to have been made with the concentrated fluid till it had been re-diluted with water.

It was proved by several experiments that the solvent action of the gastric juice is destroyed by rapid ebullition, or by evaporation at a boiling heat—an additional illustration of the well-known fact, that ferments are decomposed at an elevated temperature. This may possibly be the basis of the universally recognised dietetic rule, which declares all very hot foods or drinks to be injurious. On the other hand, the solidification of the gastric juice by artificial cold did not destroy its solvent powers—a circumstance which may be consolatory to those who are addicted to ices.

It was distinctly shown by three experiments, that the admixture of bile with the gastric juice—even when the quantity is so small that the mixture retains a distinctly acid reaction—completely destroys the solvent power of the latter secretion upon coagulated albumen.

The quantity of the gastric juice secreted in twenty-four hours was determined by Bidder and Schmidt, in the case of dogs, to be about one tenth of the whole weight of the body. Assuming the same ratio to be true for men, a man of ordinary weight (say from ten to twelve stone) would daily secrete no less than *from fourteen to about seventeen pounds of this fluid.* This is a very different estimate from that formed by Lehmann, whose calculations were based on the following data:—

100 grammes of the fresh gastric juice of a dog cannot, according to Lehmann's experiments, effect the solution of more than 5 grammes of coagulated albumen (calculated as dry).

An adult man receives into the stomach about 100 grammes of dry albuminous matter in twenty-four hours.

Hence, to digest this quantity, there must be secreted 2000 grammes, or four pounds of gastric juice.

We now proceed to the consideration of the *bile*—a subject to which Bidder and Schmidt have devoted much experimental labour.

The first question they consider is the following:—Is the bile to be regarded simply as an excretion? This point they have attempted to decide by observations on dogs in whom biliary fistulæ had been established.

A dog on whom this operation was performed lost two-fifths of its weight in thirty-four days, although its appetite was increased rather than diminished. The emaciation was especially marked both in the loss of fat and muscle. The hair fell off at many spots, or was loosened by the slightest touch. Digestion appeared to go on in an undisturbed manner, although the animal was in the habit of licking the bile as it escaped. The excrements had a greyish-yellow, and sometimes a partially green colour; but during the last few days of life regained their normal colour and odour. There were constant eructations of a bad odour, and the breath likewise had a very unpleasant smell. The urine was occasionally so concentrated, that its specific gravity was 1·050. The animal at length (on the thirty fourth day) died from general exhaustion. Dissection showed that a minute new ductus choledochus had become formed, probably between the twenty-first and twenty-fifth day after the operation, at which time the fistulous opening presented a tendency to contract. The right half of the stomach presented numerous ecchymoses, both of older and of more recent standing, although there were no symptoms of disturbed gastric

digestion during life—that is to say, there was no vomiting, and the appetite continued unimpaired. The rest of the intestinal tract presented nothing abnormal, except that it was of a somewhat deeper red tint than usual.

A second dog, similarly treated, did not present a voracious appetite, or exhibit the same amount of flatulence, or such a tendency to putrefactive decomposition as the former animal; but in the course of twenty-seven days (when it died) it had lost about one-half of its weight. Except that the fat and the muscles had almost disappeared, none of the organs were found to present any marked peculiarity.

Since the quantity of bile that escaped from the system in these two cases was not compensated for by the additional food that was taken, the idea suggested itself that the emaciation and the disturbed condition of the metamorphosis going on within the tissues might be due to the continuous drain upon the system. This view was confirmed by the two following experiments, in which this disturbing cause was eliminated:

A dog, whose spleen had been extirpated, and in whom a biliary fistula had been established fourteen days afterwards, took such large quantities of food as more than to compensate for what was lost by the escape of bile. Its bodily weight, under these circumstances, did not materially diminish during the space of two months, at the end of which it was killed. The normal development and power of the muscles were retained, but the fat had gradually disappeared. Putrefactive decomposition of the excrements, and abundant flatus of a disgusting odour, were likewise observed in this case.

A very emaciated dog, whose spleen had not been extirpated, and in whom a biliary fistula had been established, regained its healthy appearance and its previous normal weight nineteen days after the operation. During this period it took more meat and bread than were requisite for it in its perfectly healthy condition. The ductus choledochus subsequently became re-established, and the weight then again materially increased.

From these experiments, it seems clear that the question which they attempt to solve cannot be directly and positively answered either in the affirmative or the negative. By an artificial interference with the organism (by the establishment of a biliary fistula) the bile may be reduced, in a certain sense, to the condition of an excretion, if the loss thus occasioned to the system at large can be suitably covered. If this compensation be impossible, the derivation of the bile from the intestinal canal and its direct external discharge in a comparatively short time induce fatal emaciation and debility. For the full comprehension of the question in all its bearings, we should know the quantity of bile secreted in a given time and the average amount of solid constituents which it contains, the share which it takes in the process of digestion, the changes which it undergoes during and after its resorption into the blood, and lastly, the form in which it is finally eliminated from the organism.

In the strict sense of the word, we can hardly regard the bile as a digestive fluid. There is no special class of substances whose solution is dependent upon it. If, as certain experiments show, animals with biliary fistula can live even for years, the function of this fluid in digestion must, at all events, be a limited, and probably only an indirect one; and this is confirmed by the fact, that the secretion of bile does not attain its maximum till twelve or fifteen hours after food has been taken, when by far the greatest part of the ingesta must have passed beyond the duodenum; hence the greatest part of this fluid enters the small intestine at much too late a period to exert in it any great influence on the metamorphosis of the chyme.

[From trials upon various animals it has been ascertained that although the *pancreatic juice* exerts no solvent action in albuminous bodies, it yet acts with extreme power in converting starch into dextrine and sugar.]

Bernard, about four years ago, discovered that remarkable fact, that, externally to the organism, the pancreatic juice possesses the property of decomposing the neutral fats into their base and acid.

The only unquestionable action of the pancreatic fluid is that which it exerts on starch; but since the relative size of the pancreas is greater in carnivorous than in herbivorous animals (the weight of this gland being one-three-hundredth that of the whole body in dogs and cats, and only one-six-hundredth in that of rabbits), and since, further (as has been shown by Bidder and Schmidt's experiments), the greater part of the amylaceous food of the sheep is converted into sugar before it enters the

duodenum, we may fairly conclude that the principal uses of this secretion are still unknown.

There are far greater difficulties in obtaining pure *intestinal juice* than in procuring any of the secretions we have previously considered. The most recent investigations on this subject are those of Frerichs (contained in his article on Digestion), and of Zander (a pupil of Bidder and Schmidt's, who have themselves continued and extended his researches), and their conclusions are, upon the whole, very discordant.

All that we can say with certainty with regard to the physico-chemical properties of the fluid is, that after filtration it is a tenacious, ropy, colourless, and strongly alkaline substance.

According to Frerichs, the intestinal juice exerts no change on any of the ordinary elements of food. Protein bodies and gelatigenous substances remained perfectly unchanged; fat became disintegrated in the same manner as in all other viscid fluids; neither, according to Frerichs, does it exert any special action on starch. Hence he denies to the intestinal fluid any action as a direct digestive agent. Lehmann, on the other hand, found that the intestinal juice possessed, in a high degree, the power of converting starch into sugar; but protein bodies and fats were so little affected by it, that he doubts whether it exerts any digestive action on these substances, and the more so, since cubes of coagulated albumen and pieces of flesh, when introduced into the gut of a hospital patient through a fistulous opening, were expelled from the rectum almost entirely unchanged. The fistula was, however, in the lower part of the ileum, and probably near the cæcum. Finally, the results of experiments on nineteen cats and two dogs have convinced Zander and Bidder and Schmidt, that the intestinal juice exerts a solvent action on albuminous bodies, scarcely inferior to that of the gastric juice, and a sugar-forming power on starch scarcely inferior to that of saliva or of pancreatic juice.—*Brit. and For. Med.-Chir. Review, July*, 1853, *p.* 171.

45.—ON DEGENERATIONS OF THE GLANDULAR STRUCTURE OF THE STOMACH.

By Dr. C. Hanfield Jones, F.R.S., &c.

[It is somewhat singular that of all the writers who have expressed their opinions on the diseases of the stomach, none of them appear to have carefully investigated the changes occurring in its mucous membrane. And yet]

The mucous membrane of the stomach is a true gland structure, essentially different from that of the intestine; its follicles are not mere involucra of the surface, they possess a much higher function than that of merely secreting mucus. Examination of a vertical section of the healthy tissue shows that in the greater part of its extent it is made up of parallel tubes ranged side by side, and so close together that there are scarcely any interspaces discernible. These tubes are nearly of the same size as, and altogether very similar to, those of the kidney; the chief difference is, that they are more filled with epithelium, and do not exhibit a distinct central canal. They terminate as they reach the corium of the mucous membrane by blind extremities, which are often bulged, and sometimes slightly branching. Above, they open into shallow fossulæ, which are well represented in Bowman and Todd's 'Physiology,' vol. ii. p. 193. These fossulæ are lined by an epithelium consisting of columnar particles, while that which fills the tubes consists of nuclei imbedded in granulous matter, and very numerous large nucleated cells full of granulous contents. This gastric glandular epithelium differs from the renal in this important circumstance relative to the discharge of its function, that it does not remain, like the latter, attached to the basement membrane, the wall of the tube, but is thrown off and constitutes itself a part of the secretion. In the pyloric region, the fossulæ are very much deeper, and the entering tubes much shorter; while low villi, containing single capillary loops, spring from the partition walls of the fossulæ. In the other regions of the stomach there are no true villi, but a deceptive appearance is occasionally presented by papilloid masses of altered epithelium exuding from the tubes.

One morbid condition which is not uncommonly observed, is an atrophic state of the lower ends of the tubes and of their epithelium. The latter, then, consists of coarse granular matter, with a few stunted, starved-looking nuclei and cells which often contain oily molecules. The lower blind ends of the tubes are faintly marked, and sometimes are evidently tending to disintegrate; at the same time the interspaces between adjacent tubes were wider, as if some had already disappeared. In some cases the epithelium is altered, containing no healthy cells, but filling up the tubes with a coarse granular matter, while they themselves are not atrophied.

A fatty change in the epithelium is not uncommon, and in some degree is scarcely to be regarded as of pathological import. The lower ends of the tubes in our domestic animals are often quite opaque from the presence of much oil in the epithelium: there is, however, in such instances, no indication of wasting or breaking up of the tubes. Sometimes the glandular tissue seems to undergo what may be called true fatty degeneration: the tubes lose much of their natural aspect, and become converted into cylindrical tracts of granular matter loaded with oil drops. When the epithelium is in a fatty state, the inner surface of the stomach will often be found to be of a dead dull white colour; and it is rather remarkable that sometimes the change is confined to patches of varying extent, perfectly circumscribed. This change in the colour of the stomach is noticed by Andral as the result of chronic gastritis.

Together with a varying degree of atrophic change in the tubes themselves, there is often observed a remarkable alteration of the submucous tissue, or rather of the areolar tissue which forms a kind of corium to the mucous membrane. On viewing a vertical section, masses of nuclear particles are seen heaped up among the fibres, where they come in contact with the blind ends of the glandular tubes; these increase and advance upwards between the tubes, and occasion or coincide with their atrophy. The masses of nuclei are separated from each other, a certain space of healthy tissue intervening between them. The spots occupied by the nuclear deposits are sometimes depressed, so as to give rise to an appearance of open follicles. In an extreme instance the nuclear deposit has so increased as to cause almost a complete atrophy of the tubes, debris alone of which can then be discerned amid the altered intervening tissue. Vascular injection is by no means a constant accompaniment of this condition; and when it exists, it has not appeared to me at all clear that it was not of a passive kind. Together with the nuclei there is a certain quantity of granulous matter, which varies, however, in amount; it is not generally enough to conceal the nuclei.

Sometimes the exudation shows some tendency to the production of fibroid tissue, but I have never seen this developed in a very marked manner. Perhaps, however, contraction of the surrounding areolar tissue may have been the cause of the peculiar alteration observed in the following instance.

In a female, of thin and spare habit, who had been ailing two years, and who died of bronchitis with emphysema and dilatation of the heart, the liver was in a highly nutmeg state, and its Glissonian sheaths were considerably thickened; the kidneys were not healthy, and they contained reddish yellow pigment, the sign of former extravasations of blood. The mucous membrane of the stomach in the region adjoining the pylorus had a mammillated aspect, and was of a reddish brown colour. It was covered over with small, indistinct, sometimes whitish eminences, which were very apparent on a vertical section as whitish grain-like masses in the deeper parts of the mucous membrane. These masses consisted of tortuous tubes crowded and packed together, and filled with an epithelium consisting of small-sized cell particles containing oily molecules, and of free nuclei imbedded in abundant granular matter. The basement tissue of the tubes was distinct in the masses, but could not be traced upwards to the mucous surface. In fact, the convoluted tubes seemed quite destitute of any outlet for their contents. The masses were separate from each other, and were closely girt by layers of fibroid tissue which seemed to compress them. In their intervals there was no trace of tubes. The epithelium of the surface preserved its usual columnar form.

I subjoin further details of the examination of some instances of the degenerative changes in the gastric mucous membrane above described.

A pallid, ill-nourished female, aged 22, who had long suffered with epigastric uneasiness and bad digestion, died of phthisis and bronchitis. She had been fifty-one

days in the hospital, and had undergone the operation for ruptured perineum, which proved quite successful. The contents of the stomach were acid. Some portions of the mucous lining were of a dead white, and presented the appearance of numerous quasi-follicular orifices; the rest was of a faint reddish gray tint. There was no vascular injection anywhere. The white parts of the mucous membrane showed on a vertical section parallel rows of tubes filled especially at their deeper parts with oil-laden cells of very perfect form and great consistence; these cells contained oil dots, opaque and black (but not drops), imbedded in much granulous matter. Besides the cells, the contents of the tubes consisted of free nuclei and granulous matter. The tubes were not broken up; but every here and there the row was interrupted, and there was left an empty looking space, which was occupied either by remains of tubes atrophied and containing merely a faint granulous matter, or by a mass of nuclei only. In one section the tubes existed only at the upper half or two-thirds of the vertical extent of the mucous membrane, while at the lower they were atrophied and replaced by a mass of nuclei. It was these interruptions in the continuity of the tubes which gave the appearance of follicular orifices. In the pale unwhity portions of the mucous membrane the epithelium was much less fatty.

A man, aged 63, died with empyema, the consequence of an accident which had fractured several ribs. The cornea presented distinct arcus seniles. There was but slight fatty change of the muscular fibres of the left ventricle. The kidneys were not quite healthy; there were cysts on their surface. The inner surface of the stomach was of a pale colour, rather uneven; the mucous mambrane to the eye was not much altered, but under the microscope the tubes were found to be extremely wasted, and in many parts quite lost, and replaced by a granular and fibrous tissue containing multitudes of ill-shaped nuclear particles. In some parts there were groups of convolutions and bulgings of the tubes, stuffed with an opaque granulous and oily matter. The atrophy of the tubes was extremely marked. There was fibrinous deposit in the spleen.

A female, aged 19, died with syphilitic phagedena of the genitals. The stomach presented a natural aspect, with the exception of some slightly raised spots of the size of a pin's head in the vicinity of the pylorus. These seemed to be produced by accumulations of epithelium in the fossulæ. The tubes in this part were in a normal state. In the mid-region of the stomach the tubes were much wasted, those remaining only contained a granulous and oily matter.

In a middle-aged female, dying with scirrhus pylori, the stomach was found distended to some extent; its muscular coat was much hypertrophied; its mucous membrane apparently healthy. On closer examination, the lower ends of the tubes near the pylorus were seen to be aggregated into bunches, while in other parts they were very indistinct, evidently atrophied, and surrounded by intertubular exudation, consisting of nuclei and granulous matter. In one section, two large cysts were seen, full of a transparent fluid, and lined by a delicate vesicular epithelium. They lay in the substance of the mucous membrane. The kidneys were granular and cysted. There was considerable fibroid thickening of the capsule of the spleen, and some also of that of the liver.

A man, aged 51, addicted to drinking, and subject to gout, died with double pneumonia, pleurisy, and pericarditis, after five days' illness. The kidneys were healthy. The stomach appeared markedly mammillated in its mid-region; it was not injected. The tubes appeared pretty natural, but were obscured by an interstitial exudation, developing itself into nuclei and granulous or perhaps indistinct fibroid matter: at one part there was a large nodular accumulation, consisting solely of nuclei. From this mass, the nuclear deposit extended in smaller quantity among the tubes, and would, at a later period, have no doubt occasioned their atrophy. The mucous membrane of the fundus was red and softened; but its tubes were quite natural and unobscured by any intervening exudation. The pyloric portion, like the cardiac, showed no trace of mammillation: there was, however, in this part very considerable intertubular fibroid formation, with infarction of the lower ends of the tubes by oily and granular matter, and gathering up of their lower parts into bunches. Many tubes in this part were also atrophied, so that a section no longer presented a continuous row.

In a female, aged 43, who died of uterine cancer, the mucous surface of the stomach was of a dead whity colour throughout. The tubes were not wasted, but were filled

with a very opaque fatty epithelium. In the mid-region, towards the greater curvature, there was a marked mammillated aspect; this very nearly disappeared after dissecting the mucous membrane from the submucous, and spreading it out. It was probably caused by some irregular contraction. The liver was excessively fatty.

A female, aged 87, died with universal jaundice; the femur was fractured by a fall some days before death. The liver was somewhat granular on the surface, and the Glissonian sheaths appeared somewhat thickened. The ductus communis choledochus was obstructed at its lower part by a soft mass of biliary pigment matter; the gall-bladder was hence enormously distended. The kidneys were wasted and granular. The stomach was very large; the mucous membrane was quite pale, but not manifestly unhealthy to the eye. Under the microscope, it was seen to be gravely altered; there was very little trace of tubes to be discovered even on repeated examinations; here and there were some traces of them, but in by far the greater part of the tissue they had perished. Their place was occupied by a quantity of nuclear particles, granulous, and some oily matter, and occasionally fat vesicles. The formation of nuclear particles had extended quite into the corium of the mucous membrane.

A man, aged 37, died with general peritonitis, after the recto-vesical operation, undertaken in consequence of the urethra being obliterated by stricture. The stomach appeared natural to the eye. In the middle and the splenic regions, the epithelium of the tubes consisted of small, stunted, atrophied particles, appearing more like empty vesicles than anything else; it was not fatty. In the pyloric third, the epithelium was not atrophied; large granular round and oval cells were present in the exuding contents of the tubes, besides free nuclei and granulous matter.

A stout man, aged 52, in apparent health, died with extravasation of blood within the cranium, after a blow. The mucous lining of the stomach had a dead white appearance, and seemed to be irregularly mammillated, or as if its surface was every here and there somewhat elevated. The epithelium of the tube was much atrophied; it consisted of stunted cells, granular matter, and ill-developed nuclei. The tubes themselves were wasted in some degree; their deep ends were most affected, and lay imbedded in a stratum of granular matter, containing numerous nuclear particles, which infiltrated the areolar tissue. Acetic acid brought the intertubular nuclei more plainly into view.

I do not intend on this occasion to enter into any detailed examination of the causes and nature of the above changes; I can only state that I am not inclined to regard them as of inflammatory origin. They seem to us to belong much more nearly to the class of pure and simple degenerations, occurring as primary morbid phenomena, from the decay of vital power. Hyperæmia has not appeared to form any constant or necessary element of these textural changes. In the case of the nuclear formations, it is clear that there is intertubular exudation; but we have no evidence to show that it is the product of inflammatory action; I should rather consider that, owing to derangement of the natural assimilative power, the plasma, which should have formed healthy epithelium and other structures, was developed into these abnormal organizations. The morbid action seems to acknowledge a relation to cirrhosis of the liver, and to changes of the like kind. The newly formed fibroid tissue in cirrhosis is often loaded with nuclei, quite similar to those produced in the gastric masses. It is of course a matter of great difficulty to study satisfactorily the genesis of these morbid states; for, although there is strong ground for supposing that they exist in many of the multitudinous valetudinarians who are the commonest subjects of medical treatment; yet, as such individuals live on for years, and often die of some acute malady, there is seldom an opportunity of examining the organ affected while the change is in progress. To this subject I hope to devote much attention in future years, and shall be very thankful to any *confrère* who will furnish specimens and brief histories of the symptoms existing during life.

The practical results which the above investigation, as far as it has extended, supplies, are—1. That we may expect not unfrequently to meet with cases where the digestive power of the stomach is permanently weakened by the decay of more or less of its glandular structure. 2. That, in a still greater number of cases, the digestive power is weakened from an atrophy of the epithelium, which, it is conceivable, may, by judicious administration of light nourishing food, cod-liver oil, and gentle tonics, be reproduced in a more healthy state. 3. That we must be cautious

in leeching or blistering epigastria for the removal of *gastritis*, which may have no existence. The further our observation extends, the more do we become convinced that the most hopeless diseases with which we have to contend are those depending on essentially chronic degenerations of organs. Who would not rather have to deal with an acute pneumonia or pericarditis, than with a case of confirmed morbus Brightii? How often does our healing skill hang its head in hopeless foreboding when our diagnosis has revealed the existence of an organic lesion! This must of course often be; but how needful then does it become that we should be thoroughly aware of these degenerative tendencies, and exercise the utmost vigilance to anticipate and stay those destructive changes which we are unable to reverse.—*Association Med. Journal, Oct.* 7, 1853, *p.* 874.

46.—CASE OF SARCINA VENTRICULI OF MANY YEARS' DURATION, TREATED BY THE HYPOSULPHITE OF SODA.

By Dr. R. Neale, late Physician's Assistant University College Hospital.

[The patient in this case, 9 years since, was first seized with vomiting, after having suffered from pains in the abdomen for some time previously. During the last three years, however, the vomiting has become much more frequent—three or four times a-week—the vomited matters being like "beer grounds," and intensely acid. The pain, however, has decreased.]

Examination of Fluid vomited Feb. 1, 1853.—Quantity about Oij. Thick, viscid, adherent as synovia, being with difficulty poured out of a wine-bottle. Aspect peculiar, the upper portions being "barm or yeast-like," the lower more resembling gruel. Reaction very acid. The microscope exhibited numerous sarcinæ with the yeast-plant, and sporules of the penicillum glaucum

On Feb. 23rd he commenced treatment. To save space, I may say, that he was ordered the diet of a patient suffering from diabetes mellitus, with the following medicine:—

℞. Ammon. sesquicarb. gr. iij; inf. quassiæ ℥j. Fs. haustus ter die sumendus.

℞. Sulph. sublim. 3j.—3ij. pro re natâ si alvus non soluta sit.

On Feb. 23rd, previous to commencing the above, a careful examination was made of the fluid ejected the previous day.

Chemical Characters, &c.—Not viscid; diffluent as water; opalescent; no yeast appearance. On being poured,

1. Into a glass, the upper part, after standing an hour, appears like pale milk and water; when held up to window, cannot discern bars through it. Smells acid, not unlike the well-known odour of brewing. Reaction intensely acid, effervescing with carb. soda.

(a) A portion being boiled in a test-tube, becomes slightly clearer, due to fat rising and forming a ring on the surface, and a slight (albuminous) deposit falls.

(b) Nitric acid, added cold, no change; hot, the fluid becomes slightly yellow (carbazotic acid); clears more than in (a).

(c) Muriatic acid: cold, no change; hot, as in (b), excepting the yellow colour is not produced.

(d) Acetic acid: cold, no change; hot, as in (c).

(e) Liquor potassæ: when boiled with one third vol. of liq. pot., the usual indications of the presence of sugar. The man had not been forbidden that article of diet previous to the examination.

2. The sediment of the fluid, after standing an hour, occupies about 1-20th of the glass, and is quite white.

Microscopical Examination.—1-4 object glass, No. 2 eye-piece, equal to 500-600 diam.

1. Supernatant liquid: drops taken from the surface and several inches below contain only oil-globules and sporules of fungi in great abundance, with a few epithelial scales; no sarcinæ.

2. Sediment: made up of immense multitudes of epithelial scales, sarcinæ, sporules of penicillum glaucum (?), with a few pieces of muscular fibre here and there; besides which last objects, were others of the same reddish colour, unstriated

irregular in shape, and apparently made up of an innumerable multitude of minute specks not larger than pins' points when magnified with this high power. At first they were believed to be portions of muscular fibre partially decomposed; but further examination negatived this view. There appeared to be transition forms between these masses and the true sarcinæ. Have they anything to do with the reproduction of the latter? No torulæ seen in field. Size of sarcinæ, 1-666—1-500 inch diam.

March 2. Much the same; if anything rather easier since taking the sulph. and ammonia.

A table, exhibiting at a glance his state up to the time of commencing the hyposulphite, and kept by himself, will, when compared with another, kept since that period, show the effects of the remedy more strikingly than making a daily report of the case. The first of these tables will be found at the end of the report of March 23.

Urine about a pint, straw-coloured, very faintly acid; sp. gr. 1031; a white flocculent precipate of 1-12th its volume. Liquor potassæ gives, when boiled with it, a slight brown colour. The microscope shows only a very few crystals of uric acid, mixed with epithelial scales. Ejecta watery, less opalescent than last report; quantity about two quarts; intensely acid; sp. gr. 1016. When boiled with liquor potassæ, does not become so brown as does the urine.

Microscopical Characters.—Sarcinæ very abundant, larger than last report, and of various shapes, mixed with epithelial scales; also large, dark round masses, together with others less regular in shape, of the same general aspects, exactly resembling the compound crystals of uric acid and urate of ammonia, figured in Dr. Garrod's plate of the urinary deposits. The murexid test carefully applied, showed the presence of abundance of uric acid in the ejecta.

23rd.—To-day saw the patient, who says he feels better; the bowels are not so costive since taking the sulphur, and the motions are neither so black nor so hard. On the 17th he passed a very white motion, he says; he has not vomited for nearly a week, but has not yet commenced the hyposulphite, since I was anxious once more to examine carefully the ejecta before he did so, to determine, if possible, the nature of the singular masses noticed in last report. He has not taken the ammonia mixture for nearly a week. Yesterday (22nd) he vomited about a quart of whey-looking fluid, with a thin stratum of fat on the surface, and depositing a light-coloured sediment of one-fourth its volume. Reaction intensely acid, smells strongly of sulphur, due to medicine; sp. gr. 1020.

Microscopical Characters, 500—600 *diameter.*—A drop of the sediment contains numerous sarcinæ, but not so numerous as last report; also many of the "round balls" insoluble when boiled in hot water, varying in size from 1-1000 to 1-400 inch diameter. When held to the light, these "balls" glitter just like the ordinary crystals of uric acid. They have no resemblance to the balls composing sulph. sublim. which he is taking. When rubbed between two pieces of glass, they give a sensation of grittiness; unaffected by acetic acid, hot or cold. Nitric acid dissolves most of the largest balls; does not affect (apparently) many of the smaller ones.

A few drops of sediment, evaporated carefully after the addition of a drop of nitric acid, and afterwards exposed in the usual way to the vapour of ammonia, give the characteristic murexid tint. None of the irregular masses were noticed in the field.

Urine acid, much more so than last report; amber-coloured, with a copious light pink deposit; sp. gr. 1035; quantity Oij.

℞. Sodæ hyposulph. 3iv.; infus. quassiæ ℥xij. Ft. mist. cujus capiat cochl. j. magn. ter die.

Diet as before.

April 2. To-day saw patient, who came six or seven miles, and appeared fatigued by the journey. He states, that he feels decidedly better since the change in medicine, and that his symptoms are altered in many respects; he certainly appears much improved in his general aspect. Still complains of costiveness and sickness, but says the ejecta are much altered to what they used formerly to be, and are not nearly so abundant.

Examination of Matters Vomited.—Thin, pale, slightly opaque, very acid, with a thin white scum on surface, and a slight white deposit on standing. Sp. gr. 1015. Boiled with liq. pot., becomes reddish-brown, showing a moderate amount of sugar

to be present. The "scum," under microscope with former power, exhibits numerous fungus sporules and many "round balls," but no sarcinæ. "The sediment" consisted of numerous epithelial scales, sporules, "large round balls," some irregular in shape. Here and there in the field were scattered deep blood-red balls, or cells, one two-thousandth to one one-thousandth inch diam.; in some cases aggregated in masses. Sarcinæ not nearly so numerous as formerly, and their crucial markings are far more distinct than ever they have yet appeared. The middle portion of the fluid contained merely fungus sporules. Urine Oiss. to Olj., acid, more so than formerly. Sp. gr. 1050. With liq. pot., gives plain indications of the presence of sugar. Under the microscope, exhibits only a few octohedral oxalates.

℞. Sodæ hyposulph. 3vj., inf. quass. ℥xij., ℥ss. ter die; diet as before.

May 2. Better: not seen. Rep. mist. ut antea.

5th. Saw patient to-day, at his own home, he being too weak to visit me; states that, when he last came (April 2), the walk much fatigued him, and that he has since suffered from severe prostration. The sickness has greatly abated, and the vomited matters are greatly altered in appearance, not at all like the "yeast vomit." He discontinued the mixture a fortnight before the 2nd inst., but not the sulphur, which he continued to take as an aperient. He did not take any other medicine except a simple aperient powder.

℞. Sulph. præcip. 3j. ad 3iss. pro re natâ, et omit. sulph. sublim.

℞. Ol. jecor. aselli ℥j. ter die. Pergat in usu mist. ut antea.

14th. I received the following letter:—

"Since taking the oil and the fresh kind of sulphur, together with the mixture, I have been a great deal better, and have nothing to send you (ejecta). My stomach and bowels have been very easy, and motions more regular."—*Medical Times and Gazette, June* 18, 1853, *p.* 624.

47.—REMARKABLE CASE OF FOREIGN BODIES IN THE STOMACH AND DUODENUM.

By JOHN MARSHALL, Esq., Assistant Surgeon to University College Hospital.

[The patient, Mrs. B—, æt. 41, was in December, 1842, a fortnight after the birth of her fifth child, affected with hæmatemesis, vomiting a wash-hand basinful of blood. The succeeding faintness and prostration were extreme, and her recovery was very slow. Mr. Marshall continues:]

In the autumn of 1845 I found her complaining of frequent sickness, with pain at the epigastrium, and in the left groin. On examining the abdomen, I discovered a hard tumour in the left iliac fossa, which moved freely across the abdomen, as she turned from side to side. The size and shape of this tumour were very like an ordinary placenta, one edge much thicker than the other; the thickest edge much harder, and imparting to the fingers the feeling of its being very heavy. She stated that she had felt this substance for some months, and whenever she turned in bed it always moved, and caused nausea, but gave her no pain when she was quiet, nor was it tender to the touch. She suffered much from flatulence, and pain between the shoulders shooting through to the left breast. The catamenia had not appeared for three months, and she believed she was pregnant. The bowels were torpid, and she was obliged frequently to take her usual aperient of blue pill and colocynth. The nausea increased, and the stomach rejected everything; large quantities of a green ropy mucus, occasionally with blood, were thrown up, all of which was carefully examined, without detecting anything which would throw light on the case. Numerous remedies were employed to allay her distressing sickness, but were all equally unavailing, and the emaciation and exhaustion became so great, that her death was daily expected. One teaspoonful of pale brandy was now given every hour, and not an atom or drop of anything beside. From this time the vomiting ceased. After continuing this for two days, a little food was allowed, and she gradually gained strength and flesh, and in four months was able to walk two miles, and looked almost as well as usual.

During this illness, Dr. Cowan, of Reading, visited my patient; he was greatly interested in her case, and expressed himself to be as much puzzled as I was to

specting the nature of the tumour, which he compared to a cannon ball rolling across the abdomen.

Nearly five years elapsed before any serious symptoms returned. The pain between the shoulders was often complained of, and there was occasional sickness. Much difficulty was experienced in keeping the bowels in order; the secretions were generally healthy in colour, and formed. Occasionally the face and limbs became œdematous, but an aperient pill, with a little gin in gruel taken at bedtime, would always remove these symptoms in two or three days. The catamenia never returned after the illness of 1845.

On the 8th of October, 1850, I again saw her in consultation with Mr. Corsellis, of B——. From him I learned that she had been ill three weeks, that all her old symptoms had returned. Incessant vomiting, with pain between the shoulders, had reduced her to a state of great weakness and emaciation. A few hours after my visit, severe spasmodic pain came on in the bowels, and quickly terminated her sufferings.

Post-mortem.—Eighteen hours after death, with the assistance of Mr. Corsellis, I examined the body. The thoracic viscera were healthy, and free from adhesions. On opening the abdomen the stomach was found drawn down to the pubes, and in its form resembled a champagne bottle. The pyloric end lay beneath the arch of the pubes, and the duodenum under a portion of the sigmoid flexure of the colon, from which it was traced to the pancreas, which was drawn down considerably out of its normal position. The liver was large, and paler than natural. The gall-bladder distended with bile. The spleen and pancreas were healthy, but small. The kidneys rather hypertrophied. The bladder small. The uterus and ovaria healthy. The intestines were of very small calibre. The cæcum and colon resembled the small intestines, the bands and sacciolated appearance being scarcely discernible. The jejunum and ileum containing a little ropy mucus, and there was some fæcal matter in the rectum. No ulceration was apparent throughout the whole length of the intestinal canal, nor was there found the slightest peritoneal attachment or appearance of inflammation within the cavity of the abdomen.

Having tied the œsophageal end of the stomach and the duodenum, I removed these organs. The stomach contained about a pint of semi-fluid matter, and felt very like the crop of a fowl; the duodenum resembled a large sausage stuffed with lead. On cutting into the stomach I found it partially filled with some gruel-like fluid, and in the lower half—which evidently constituted the tumour during life—an immense number of pins, of a purple black colour, not corroded, varied in size, all bent or broken, many very pointed. The pyloric half of the stomach presented a remarkably thickened condition of the villous coat, being highly vascular, and raised in rugous elevations like the stomach of an ox. The muscular coat also was greatly hypertrophied. The weight of the pins contained in the stomach was *nine ounces.* An incision made into the duodenum *displayed a mass of pins very tightly packed, of various shapes, similar to those found in the stomach, and wholly obstructing the tube.* These weighed a *pound*, as nearly as I could ascertain without removing them.

Her husband could scarcely believe the truth of what he saw, when we showed him the contents of the stomach, for he affirmed that he had never seen his wife put pins into her mouth. A son, 17 years of age, said that he had often observed his mother biting pins, and believed that she swallowed them. She took them out of her thimble with her tongue, having previously bent the head and point together. When his mother corrected him for any bad habit, he would say—Why do you eat pins? This reply always silenced her. He stated that the servants when shaking the carpets frequently remarked on the number of bent pins they found.

Mrs. B—— had a keen appetite, and would always partake of any food she fancied, however improper or indigestible. I have known her eat cold boiled pork when unable to raise herself in bed, having four days previously vomited a large quantity of blood. Of her early history I can learn but little. A sister informs me that, when a child, she was fond of eating starch and slate pencil—and she remembers her biting pins. When seventeen years of age she vomited blood, and remained for some months an invalid, until sent for change of air to Bath.—*Med. Chirurgical Transactions*, 1852, *p.* 65.

48.—ON INFLAMMATION OF THE LINING MEMBRANE OF THE STOMACH.

By Dr. George Budd, F.R.S., &c.

[Inflammation of a mucous membrane may induce, 1st, Alteration of mucus, rendering it viscid or opaque. 2nd, Effusion of plastic lymph, forming a coating of the membrane. 3rd, Formation of pus. But in all these cases no permanent mischief need follow. For obvious reasons the knowledge of the inflammatory diseases of the mucous membrane of the stomach is very vague. The simplest form is, perhaps, that produced by excess in eating or drinking, and]

The rapid recovery in such cases is owing to the active nutrition of the mucous membrane. In consequence of this active nutrition, the effects of inflammation of the mucous membrane of the stomach are much more transient than those of inflammation of the mucous membrane of the air-tubes, or of the urinary bladder, or of the urethra, or even of the intestines.

The mucous membrane of the air tubes, or of the urethra, or of the urinary bladder, wastes but little, and is slowly renewed. If it be much injured, the process of repair is long.

The mucous membrane of the stomach, on the contrary, has an active function. Its epitheljum is frequently shed to effect digestion, and is rapidly renewed; and, in consequence, the superficial inflammation of it we are considering is very transient.

[Another common cause of this disease is from the imbibition of alcoholic drinks, the intensity depending on the state of dilution.]

The effect of spirits on the coats of the stomach, like that of food which is hard of digestion, depends greatly on the previous state of the stomach, and of the general health, as well as on season and climate. Spirits hurt the stomach more when its mucous coat is already inflamed, or when, from an impediment to the passage of the blood through the liver or the chest, or from any other cause, the vessels of the stomach are congested, so that liquids are slowly absorbed from it; and in hot seasons, or hot climates. Under these circumstances, small quantities of fermented drinks may do much mischief.

In the observations I have cited from Dr. Beaumont, nothing is more striking than the rapidity with which the stomach recovered, under the influence of low diet and cooling drinks. Without this power of rapid recovery, the stomach would be unfit for its office. If the erythematous inflammation, which is excited by unwholesome food, or by excess in eating or drinking, took long to subside, the abstinence required for recovery could hardly be borne.

The inflammation, instead of subsiding rapidly, may, however, be kept up by repeated indiscretion in eating or drinking. Small quantities of solid food, or of fermented drinks, which, at other times, would do no harm, are sufficient to keep up a soreness that already exists.

The chronic inflammation so excited is attended with an increased secretion of mucus, and causes a thickening, and the so-called mammillated appearance, and occasionally, I believe, minute superficial ulcers of the mucous membrane. Its most characteristic symptoms are, constant slight tenderness at the epigastrium, slowness of digestion, pain or uneasiness in the stomach, and occasional vomiting after meals, especially after meals of solid food, and a white and furred tongue. The matter vomited contains viscid mucus, which, now and then, presents a few streaks of blood, more or less altered. The disorder, even after it has lasted a considerable time, generally disappears readily if the stomach be allowed sufficient intervals of rest, or the patient be restricted to cooling drinks, and a diet consisting entirely of farinaceous substances and milk.

A superficial or erythematous inflammation of this kind occurs, not only as a disease by itself in persons otherwise healthy, but also very frequently in the course of various other inflammatory or febrile diseases, when the food has not been brought down to the diminished power of the stomach. Under such circumstances the inflammation of the stomach is more difficult to recognise, from its symptoms being complicated, or masked, by those of the primary disease. It is thus often overlooked, and much mischief is in consequence done by the unseasonable use of stimulants.

Chronic inflammation of the kind we are now considering sometimes results, not from the digestive powers of the stomach being overtaxed, but from the existence of some impediment to the passage of the digested food from the stomach into the intestine. When, for example, a simple deep ulcer exists near the pyloric end of the stomach, interfering with the action of its muscular fibres, or when the pyloric orifice is slightly strictured, or is pressed upon by a large liver, the stomach cannot always completely empty itself, and what remains in it, after digestion is over, frets and inflames its mucous coat. As the inflammation, in such cases, results from an abiding condition, itis difficult to remedy, and thus occasionally leads to habitual vomiting of ropy mucus. This happened in a woman who died a few years ago, in King's College Hospital, from the effects of a large simple ulcer near the pyloric end of the stomach. Much ropy mucus was vomited for a long time before death, leading to the suspicion of cancer of the stomach, and, after death, ropy mucus of the same kind, hard to detach, was found coating almost the whole surface of the mucous membrane.

In the same way, if the urinary-bladder, or the gall-bladder, cannot completely empty itself, the retained urine or bile decomposes, or becomes too highly concentrated, and consequently frets and inflames the mucous membrane. Inflammation of the mucous membrane of the stomach would be caused in this way much more frequently if the contents of the stomach could not be discharged by vomiting. The stomach has, fortunately, two outlets for the escape of irritating matters.

The mucous membrane of the stomach may be fretted and inflamed by various conditions besides excesses in eating or drinking, and the swallowing of substances which are hard of digestion, or which exert an injurious chemical action upon it. Among these conditions may be severe or long-continued abstinence. The stomach is an organ whose action, like the actions of the voluntary muscles and the brain, is destined to be intermittent; and when the digestive power is exhausted, a certain period of total abstinence, or rest, is required in order to restore it. The first effect of abstinence is, then, to strengthen the stomach, and enable it to digest a greater quantity of food; but if the abstinence be complete, and exceed a certain limit, the nutrition of the mucous membrane becomes impaired; digestion then grows feeble, and changes in the texture of the membrane take place, which, in appearance at least, are very like those which inflammation produces.

This fact, which has been indistinctly perceived since the time of Hunter, was noticed, a few years ago, by MM. Andral and Gavarret, during a course of experiments to ascertain the influence of various conditions on the composition of the blood. M. Andral says:—

"In some experiments which I undertook with M. Gavarret, for the purpose of determining the composition of the blood in animals deprived of food, one circumstance particularly struck me,—namely, a notable augmentation of the fibrin. My astonishment ceased when, on opening the bodies of these animals, I found in their stomachs evident signs of inflammation, such as bright redness, softening, and numerous ulcerations of the mucous membrane."

He then gives the following details of one of the experiments in question:—Three dogs, in good health, were bled on the same day, the 21st December, 1841, in order to ascertain the composition of their blood, and were then submitted to different degrees of abstinence until they died.

The first was deprived entirely of food and drink, and lived twenty-one days. Some blood was drawn, for analysis, at the end of the first week, and again at the end of the second week, and it was found that the fibrin had increased in the intervals of the successive bleedings from 2·3 parts in 1000 to 3·9 and 4·5 parts.

The second dog was deprived of food, but allowed to drink water, and lived twenty-five days. Like the former, it was bled at the end of the first and second weeks, and the proportion of the fibrin was found to have increased in the intervals of the bleedings, from 2·2 parts to 2·9 and 4·0 parts.

The third dog was allowed a small quantity of soup every morning, and lived thirty-three days. Blood drawn at the end of the first and second weeks had very little more fibrin than that drawn at the commencement of the experiment, but, at the end of the third week, when some blood was again taken, the fibrin was found to have increased from 1·6 parts to 3·3 parts.

M. Andral says that this dog, which was not completely deprived of food, was the

only one in which the stomach was not ulcerated, and that in it the redness of the mucous membrane of the stomach was less general and less vivid than in the others.

The last instance shows, that even a small quantity of food, if it contain all the elements requisite for nutrition, may protect the stomach, and prevent those destructive changes which total abstinence causes; and this accords with the well-known fact, that persons who, from a scanty diet, are much wasted, can sometimes, like persons wasted by fever, digest great quantities of food.

The case is very different if a person be long restricted to food, which, whatever be its quantity, is not sufficiently varied for healthy nutrition. If such a diet be persisted in beyond a certain time, the nutrition of the mucous membrane of the stomach is impaired, as by total abstinence, the appetite fails, and digestion is greatly enfeebled.

This was well shown by experiments, first performed by Majendie; and subsequently repeated, and varied, by a Committee appointed by the French Institute, with Majendie at its head, to determine the nutritive properties of different kinds of food. The experiments proved that dogs kept exclusively on water, with the addition of oil, sugar, fat, or even of albumen, fibrin, or gelatine, in their pure state, soon die of starvation just as when kept on water alone.

The subject is further illustrated by the disorders of health that have been observed to occur in prisoners kept on a diet of bread and water.

A good account of these disorders has been given by Mr. Malcolmson, in a letter addressed, in 1837, to Sir Henry (now Lord) Hardinge, on the effects of solitary confinement and a bread and water diet on the health of prisoners in India. He says, "Many men, particularly those of indolent habits, endure a confinement of four or six weeks on bread and water, without injury to their health; but, in some instances, a shorter period *is sufficient to cause a total loss of appetite; the bread is hardly touched, and on other food being allowed, the patient is unable to eat or digest it.* The stomach becomes weak; there is uneasiness across the stomach, spleen, and liver; the latter is torpid. The bowels are confined, or they are relaxed; with slimy discharges, unaccompanied with pain; yet the swollen red tongue indicates the existence of irritation of the mucous membrane of the digestive canal. The pulse is quick and feeble; and the clammy skin, vertigo, debility, headache, and sleeplessness, show how much the constitution suffers from diminished nervous power. The convalescence is slow, and the treatment requires to be adapted to the enfeebled state of the system."

It appears from the instances given by Mr. Malcolmson, that when a man is long kept on such a diet, the health is irretrievably ruined: the subsequent allowance of food sufficient for the maintenance of health does not restore him.

These observations of Mr. Malcolmson are confirmed by the early Reports of the Inspectors of prisons.

The irreparable injury to the health produced by long continuance in a diet deficient in some of the principles requisite for nutrition, is also well shown in the curious and painful history of Dr. Stark, who, in 1769, when he was pursuing his medical studies in St. George's Hospital, heroically made himself the subject of experiment.

His experiments were commenced on the 12th June; and from this time till the 26th July, that is, for more than six weeks, he lived on bread and water only, increasing from time to time the daily allowance of bread from 20 ounces, which he took at first, to 38 ounces. For the next fortnight, from the 26th of July to the 9th of August, he varied the diet by subtracting, first 4, and then 8 ounces, from the 38 ounces of bread, and adding an equal quantity of sugar.

The person upon whom these experiments were made was, to use his own words, "a healthy man, about 29 years of age, 6 feet high, stoutly made, but not corpulent, of a florid complexion, with red hair."

Once during the course of these experiments, he yielded to his craving for food of other kind, and ate 4 ounces of meat, and drank two or three glasses of wine; but otherwise he adhered rigidly to the diet. On the 9th of August, that is, at the end of eight weeks and two days, he was only 2 lbs. less in weight than when he commenced his experiments; but scurvy was making its appearance. The entries made in his Journal about this time show that the nutrition of the lining membrane of the stomach and bowels had become greatly impaired. He states, on different

occasions, that he had little appetite,—that he ate the latter part of the allowance of sugar with great abhorrence,—that he had pains in the bowels, and frequent liquid stools, which contained some clear, gelatinous substance.

His experiments were pursued, with some slight variation, and the scorbutic symptoms made progress. Subsequently, there occurs the following entry in his journal:

"On the 8th of September, I was so weak and low, that I almost fainted in walking across my room. Had four or five loose stools in the course of the day; was sick; and my tongue was foul."

The experiments were still continued, and the narrative goes on till the month of February, when the Doctor, reduced to a most deplorable condition, fell a victim to his love of science.

It will be seen, that in Dr. Stark, as in the prisoners that fell under the observation of Mr. Malcolmson, the loss of appetite and enfeebled digestion that resulted from the defective diet, were attended by frequent slimy discharges from the bowels. A similar disorder of the bowels was noticed by Majendie in his experiments on dogs, and continually recurs in the early Reports of the Inspectors of Prisons. The insufficient diet leads, in the bowels as in the stomach, to impaired, and often to an inflammatory state of the mucous membrane.

Happily, severe disorders of the digestive organs, resulting from insufficient food, are, in this country, extremely rare; but it is probable, that there is sometimes truth in the popular notion, that in persons whose digestion is weak, the stomach is frequently much injured by too long fasting. It has often seemed to me, that a rigid diet, too long persisted in, in the early stage of continued fever, has been productive of much mischief in this way.

Inflammation of the mucous membrane of the stomach may be excited in another way still; namely, by some noxious matter in the blood.

This has been strikingly shown by experiments that have been made on the lower animals for the sake of ascertaining the effects of arsenic. Mr. (now Sir Benjamin) Brodie, in a paper on this subject, published in the Philosophical Transactions for 1812, says:—

"Mr. Home informed me, that in an experiment made by Mr. Hunter and himself, in which arsenic was applied to the wound of a dog, the animal died in 24 hours, and the stomach was found to be considerably inflamed.

"I repeated this experiment several times, taking the precaution always of applying a bandage to prevent the animal licking the wound. The result was, that the inflammation of the stomach was commonly more violent and more immediate than when the poison was administered internally, and that it preceded any appearance of inflammation of the wound." After detailing some of his experiments, Mr. Brodie thus sums up the effects of the poison:—

"These experiments were repeated, and the results, in all essential circumstances, were the same. The symptoms produced were,—1. Paralysis of the hind legs, and afterwards of the other parts of the body; convulsions; dilatation of the pupils of the eyes; insensibility;—all of which indicate disturbance of the functions of the brain. 2. A feeble, slow, intermitting pulse, indicating disturbance of the functions of the heart. . . . . 3. Pain in the region of the abdomen; preternatural secretion of mucus from the alimentary canal; sickness and vomiting in those animals which are capable of vomiting;—symptoms which arise from the action of the poison on the stomach and intestines."

The following is the account he gives of the appearances observed on dissection:—

"In animals killed by arsenic, the blood is usually found fluid in the heart and vessels after death; but otherwise, all the morbid appearances met with on dissection are confined to the stomach and intestines. . . . . .

"In many cases, where death takes place, there is only a very slight degree of inflammation of the alimentary canal; in other cases the inflammation is considerable. It generally begins very soon after the poison is administered, and appears greater or less, according to the time which elapses before the animal dies. Under the same circumstances, it is less in graminivorous than in carnivorous animals. The inflammation is greatest in the stomach; but it usually extends also over the whole intestine. I have never observed inflammation of the œsophagus. The *inflammation* is greater in degree, and more speedy in taking place, when arsenic is

applied to a wound, than when it is taken into the stomach. The inflamed parts are in general universally red; at other times they are red only in spots. The principal vessels leading to the stomach and intestines are turgid with blood; but the inflammation is usually confined to the mucous membrane of these viscera, which assumes a florid red colour, becomes soft and pulpy, and is separable without much difficulty from the cellular coat, which has its natural appearance. In some instances, there are small spots of extravasated blood on the inner surface of the mucous membrane, or between it and the cellular coat, and this occurs independently of vomiting. I have never, in any of my experiments, found ulceration or sloughing of the stomach or intestine; but, if the animal survives for a certain length of time, after the inflammation has begun, it is reasonable to conclude it may terminate in one or other of these ways."

In another paragraph, he says:—

"The inflammation from arsenic, occupying in general the whole of the stomach and intestine, is more extensive than that from any other poison with which I am acquainted. It does not affect the pharynx or œsophagus, and this circumstance distinguishes it from the inflammation which is occasioned by the actual contact of irritating applications."

These experiments of Sir B. Brodie have been repeated by others, with the same results, and have been further confirmed by numerous cases in which arsenic applied to a sore, or to a large surface even of sound skin, or inhaled in the form of vapour, has proved fatal to man. In such cases, unless death occur early from the action of the poison on the nervous system or the heart, pain in the belly, with vomiting and the discharge of mucus from the bowels, almost always comes on; and after death marks of extensive inflammation of the mucous membrane of the stomach and intestines exist.

It seems probable that this inflammation results from some of the poison being eliminated at the mucous membrane of the stomach and intestines—a membrane which must be regarded, not as a mere lining of the tube, as the mucous membrane of the œsophagus is, but also as an expanded gland, destined to furnish abundant secretions, and by virtue of its active secreting power, occasionally instrumental in eliminating noxious principles from the blood.

Many other substances, when absorbed into the blood from the surface of the body, have, like arsenic, an especial action on the stomach and intestines. Jalap, for example, purges, and lead excites colic, when applied to a wound. There can be little doubt that some of the noxious principles that may be bred into the body act in a like special manner on these organs, and may excite inflammation or functional disorder of them.

When arsenic is given medicinally, it should be given largely diluted in order that it may exert no direct injurious influence on the stomach; but when this precaution is adopted, it often happens, after the medicine has been taken some time, even in moderate or small doses, that nausea comes on, with pain and a sense of burning heat in the stomach. These symptoms are usually the earliest distinct indications that the arsenic has been given in too large quantity, and it is very important to bear in mind that they depend on *inflammation* of the mucous membrane of the stomach. On the occurrence of these symptoms, the arsenic should be left off, but the patient should be kept on a sparing farinaceous and milk diet. The disorder of the stomach will then quickly subside.

If, after the occurrence of the gastric disorder, the use of the arsenic be continued, the sufferings referable to the stomach increase, and an inflammatory state of the bowels likewise comes on, causing griping pains of the belly, with diarrhœa and the discharge of slimy mucus. The inflammation of the stomach and bowels thus excited seems often not to depend on the direct local action of the arsenic on the coats of the stomach, but on the accumulation of it in the system. The pain in the stomach and nausea seldom come on till the arsenic has been taken for some time; and if, under proper management, they subside speedily, and the arsenic be then taken again, the disorder in most cases soon recurs.

Whenever inflammation of the stomach is excited by some noxious matter in the blood, which must necessarily be conveyed to every part of the mucous membrane, and be carried in the blood to every other part of the body, we may expect the inflammation, like that which results from the absorption of arsenic, to be

more extensive than that caused by the mere outward application of an irritating agent, and to be attended by symptoms of inflammation or irritation of the bowels, and by some disturbance of the functions of other organs, which the inflammation of the stomach itself cannot explain.

The gastric disorder in yellow fever and in cholera, which is attended by great congestion of the stomach, and by effusion of fluids from the mucous membrane, which has many characters in common with those states which we designate inflammation, is probably brought on in this way, by the influence of some poison acting through the blood.

Another instance of inflammation of the stomach arising from an unhealthy condition of the blood is that which sometimes occurs in gouty states of the system, when the gout does not fix itself in the limbs, or when it suddenly leaves them.

The stomach is more apt to suffer from the sudden retrocession of gout than any other organ; and two kinds of gastric disorder arising in this way have been recognised.

The first and most common kind usually occurs in chronic gout, and is chiefly marked by a feeling of weakness, or sinking in the stomach, with griping pain and a sense of cramp. The pain is relieved by pressure, and is seldom attended with vomiting, fever, or other symptoms indicative of actual inflammation.

When the disorder has these characters, it is best treated by warm alcoholic stimulants, and by sinapisms, applied with the view of recalling the gout to the joints that have been recently or oftenest affected with it.

The second kind of gastric disorder succeeds active inflammatory gout in the joints, and is marked by severe pain in the stomach, a high degree of fever, and frequent vomiting or retching, often attended by profuse diarrhœa. If the disorder be not controlled, the active febrile symptoms are early followed by a state of alarming and sometimes fatal collapse.

This affection of the stomach is, now-a-days, of rare occurrence, and has not been sufficiently studied. There can be little doubt that the disorder is inflammatory, but that, like gout in other parts, it has characters which may serve to distinguish it from common inflammation.

One of the most striking characters of gouty inflammation of the limbs is an abundant effusion of fluid into the synovial capsules, or into the cellular tissue. In gouty inflammation of the stomach, an effusion of the same kind sometimes takes place into the cellular tissue under the mucous coat, causing great thickening of the walls of the stomach. In illustration of this, I here show you a remarkable preparation, which I have found in the museum of the College. It exhibits a considerable portion of the pyloric end of a stomach, the walls of which are enormously thickened by what seems to have been coagulable lymph effused into the cellular tissue under the mucous coat. The preparation was left to the college by Dr. Hooper, and is thus described in his catalogue:

"*A Portion of an Adult Stomach.* There is considerable deposition of albumen between the coats—between the muscular and villous coats. The subject was labouring under acute rheumatic fever, with swelling of all the limbs, which suddenly disappeared, and his stomach seized with pain. He became delirious, and lived two days. Mr. Guthrie's stomach had the same appearance."

What is here termed "acute rheumatic fever" was, in all probability, acute gout affecting a great number of joints at once.

This peculiar form of inflammation of the stomach exemplifies a fact which must ever be borne in mind in the consideration of inflammatory diseases, namely, that the course and character, and, in great measure, the event, of inflammation in any tissue, depend on the nature of the influence by which the inflammation is caused.

When the gouty disorder of the stomach succeeds active gouty inflammation of the joints, and has itself the characters of active inflammatory disease, the most efficient remedies are leeches, or a blister, applied to the epigastrium; abstinence from all stimulating food; effervescing potash-water, in small quantities at a time, to allay thirst; and opium, to alleviate the severe pain, and to support the action of the heart. In conjunction with these remedies, sinapisms or other stimulants should *be used, for the purpose* of recalling the gout to the joints which it has recently left.

Another form of inflammation of the stomach is now and then met with, in which

coagulable lymph becomes effused into the cellular tissue under the mucous coat, which coagulable lymph, if not soon absorbed, hardens and contracts, forming a dense gristly tissue, binding the mucous membrane to the coats beneath. Inflammation having this result, frequently occurs at the margin of old ulcers of the skin; but it often exists also, especially in the neighbourhood of the pylorus, independently of ulceration, or any other permanent change of texture in the mucous membrane. In such cases, the lymph is generally effused pretty evenly in the entire circumference of the pylorus, and leads to the formation of a gristly ring or band, which, by its contraction, permanently narrows or strictures the orifice. This form of the disease seldom occurs till near the age of forty, and is, I believe, almost invariably the effect of spirit-drinking. It is usually found in conjunction with marks of adhesive inflammation of the liver, spleen, and other organs, which spirit-drinking so frequently causes.

The inflammation most probably involves the mucous membrane, as well as the cellular tissue beneath; and, at its onset, causes, like other forms of inflammation, pain, and tenderness of the stomach, and vomiting. The inflammatory symptoms subside as the mucous membrane recovers; but gradually the lymph in the cellular tissue contracts, and those disorders ensue which a narrowing of the pyloric orifice of the stomach occasions. The food is retained in the stomach longer than it should be; the stomach consequently grows larger, and the patient has an unusual facility of vomiting. Some years ago, I made a *post-mortem* examination of a gentleman who died of granular disease of the kidney, in whom narrowing of the pyloric orifice of the stomach, from adhesive inflammation of the areolar tissue, likewise existed. The only indication of this latter disease was an extraordinary facility of vomiting, which he had long had. He could empty his stomach almost when he pleased; but he sometimes vomited involuntarily, especially after having indulged more than usual in eating and drinking; and, on such occasions, it almost invariably happened that the liquids he had taken were rejected, while the solids were retained.

When the narrowing of the orifice is greater, and the action of the muscular fibres near the pylorus is impeded, the stomach seldom completely empties itself, and the acid residue of digestion in it ferments, causing heart-burn, sour eructations, and flatulence, and now and then excites inflammation of the mucous membrane. The stomach continues to grow larger, and, as its capacity augments, the vomiting may become less frequent, but more is thrown up at a time, and at length the disease destroys life by impeding the passage of the food into the intestine.

The same symptoms of obstruction are produced by cancer of the pylorus, which occurs at the same age, and from which the disease we are considering is distinguished by the slower progress; by the absence of any perceptible tumour; and by the circumstance, that it occurs almost exclusively in spirit-drinkers.

In some cases, the disease, instead of being limited to the pylorus, extends some distance in front of it, and the morbid changes, as well as the symptoms, are very difficult to distinguish from those of cancer.

During the inflammatory process, the disease, like adhesive inflammation of the liver, is probably much under the influence of treatment. When the inflammatory process is over, and the lymph has become hard and contracted, the treatment can only be palliative. The evils resulting from undue acidity and flatulence may be mitigated by remedies suited to these conditions. Vomiting and other gastric disorders may be lessened by proper regulation of the diet; but the most important point is, to make the patient give up his habit of drinking, and thus to prevent recurrence of the inflammation, and other addition to the mischief already done, than that which time of itself brings.

In the *treatment* of inflammation of the mucous membrane of the stomach, the fundamental point is to give the stomach sufficient intervals of rest, and to avoid irritating it by physic or food. For inflammation brought on by alcoholic drinks, or by undigested or irritating food, nothing more is generally necessary than cooling drinks, and restriction for a few days to a sparing diet, consisting of light broths, farinaceous substances, and milk. If the inflammation be very severe, causing much pain and tenderness, with a sense of heat at the stomach, and frequent vomiting on the contact of food, leeches may be applied to the epigastrium; the stomach may be cooled, and its irritability much lessened, by sipping from time to time iced water, or by holding *pieces of* ice in the mouth, and swallowing the water as the ice dis-

solves; and the diet may be still further restricted. Broths may be interdicted, and, for a few days, nothing more be allowed than the simplest drinks, and those farinaceous substances that are principally composed of starch. In active inflammation of the entire stomach, or when, from any cause, the digestive power is very feeble, there is usually dislike of animal food, and, by a natural instinct, arrow-root, gruel, &c., are substituted for it. Even farinaceous substances, when they contain much gluten, are found to be heavy and oppressive. The peculiar business of the stomach is to dissolve the albuminous constituents of the food. The gastric juice has comparatively little action on the starch, which, consequently, taxes the stomach less,—most probably passes out of the stomach more quickly, and is certainly found, when the digestive power is suspended, to be less oppressive to it. As I have before observed, the restoration of the stomach to its healthy condition is greatly promoted by the active nutrition of its lining membrane.—*Med. Times and Gazette, June* 3, 1853, *p.* 565.

49.—ON THE PHYSIOLOGY AND DISEASE OF THE PANCREAS.

By Dr. Bright and M. Bernard.

[In 1832, three papers were read successively before the Medico-Chirurgical Society on this obscure but interesting subject; the authors being Dr. Bright, Mr. Lloyd, and Dr. Elliotson. These gentlemen directed attention to a peculiar and rare symptom.]

"The symptoms to which I refer," said Dr. Bright, who was the author of the first communication, "is a peculiar condition of the *alvine evacuation;* a portion more or less considerable assuming the character of an oily substance resembling fat, which either passes separately from the bowels, or soon divides itself from the general mass, and lies upon the surface, sometimes forming a thick crust, particularly about the edges of the vessel, if the fæces are of a semifluid consistence; sometimes floating like globules of tallow which have melted and become cold; and sometimes assuming the form of a thin fatty pellicle over the whole, or over the fluid parts in which the more solid figured fæces are deposited. This oily matter has generally a slight yellow tinge, and a most disgustingly fœtid odour."

The importance of Dr. Bright's views, as bearing upon recent investigations, will be seen in the following summary of them. He says:

"When we draw a comparison between the three foregoing cases, a very close analogy, or even identity, in many circumstances, may be traced. In all of them chronic ailment terminated, sooner or later, in jaundice; and in all of them a great peculiarity in the character of the dejections existed. In the result of the examination after death we have likewise some circumstances which coincide in all—*obstructed biliary ducts; the liver gorged with bile; fungoid disease* attacking the *head of the pancreas;* and *malignant ulceration* on the surface of the *duodenum.* The question to be solved is, upon which of the conditions indicated or caused by these morbid changes, if upon either, the peculiarity of the evacuations depended? That the obstruction of the biliary ducts, or even the total absence of all indication of biliary secretion, is not usually attended by the same peculiarity in the evacuations, many cases which have been cautiously detailed by various authors, and many which we have all observed, bear sufficient testimony; and I was therefore induced to ascribe it either to the existence of malignant disease, or to that disease being situated in the pancreas. That the simple fact of malignant disease existing is not *necessarily* productive of such appearances in the feculent matter, I infer from cases both of that form of disease and of melanosis in the liver to a very great extent being, within the scope of my experience, unaccompanied by any such discharge, though the evacuations were submitted to the most rigid observation. That simple ulceration in the bowels, to any known extent, is not attended by any such symptom, I am led to believe, from knowing that neither in the most extensive ulceration of the large intestines in cases of dysentery, nor in the worst cases of ulceration of the small intestines in fever, in diarrhœa, or in phthisis, does anything of the kind usually occur. Whether, however, malignant ulceration of the mucous membrane *is* accompanied by this symptom I cannot assert, though I have often seen most *extensive ulcers of the pylorus* and of the rectum, where, although the evacuations

were attentively observed, such fatty matter was not detected. As, however, a malignant ulceration of the membrane did exist in each of the foregoing cases, it is not impossible that this was the cause of this symptom; but we must bear in mind that such ulcerations are *by no means* uncommon, and that the phenomenon of which I am speaking is uncommon; and that in each of the cases it was accompanied by another morbid appearance, which is not common—namely, the malignant disease of the pancreas. The fact of the intestinal ulceration having, in each case, occupied the duodenum, does, however, somewhat diminish the weight of this observation, for that certainly is not so frequent an occurrence."

Such is Dr. Bright's analysis of the cases adduced by him, in which the peculiar discharge above mentioned—of fat in the evacuations—existed as a positively ascertained symptom. Let the reader not omit to weigh well every assertion and every reservation here set down; we beg to assure him beforehand that not one clause of the above paragraph is superfluous. Dr. Bright then proceeds to analyse several other carefully observed cases, bearing upon the question by the greater or less similarity of their symptoms and morbid appearances, but differing in the absence of the "peculiar symptom." In two of these cases there were some of the recognised symptoms of pancreatic disease, and this diagnosis having been made, was negatived by Dr. Bright on the ground of the absence of fatty matter in the evacuations. The negative opinion was correct; but so far from maintaining the reasoning on which it was founded to be unassailable, Dr. Bright, on the ground of later experience, believes his argument to have been in fact fallacious, and proceeds to relate three other cases in which pancreatic disease existed, even associated with a duodenal affection, without the occurrence of the fatty discharge. The first was one in which *the pancreas was completely involved in scirrhous disease, the duodenum thickened, contracted, and cancerous*, but not ulcerated, and *the common bile duct absolutely obliterated at its duodenal extremity.*—(Case 6, p. 34.) This case approaches very closely the first three; "the only point of distinction seems to be the condition of the duodenum, which in all the other cases had been affected by malignant ulceration, but in the present case was only united by the scirrhous disease to the pancreas." It is, however, *barely possible* that *the fatty evacuation may have occasionally existed, and have escaped observation;* for the case, though carefully watched, was not specially watched in regard to this symptom during life. The next case related is one of *malignant disease limited to the middle third of the pancreas*, with some degree of *contraction of the duct* at the duodenal end; *contraction also of the bile duct* (causing jaundice), and *incipient cancerous thickening of the duodenum.*—(Case 7, p. 36.) The alvine evacuations were "clay-coloured and yeast-like; but neither fatty matter nor mucus had been observed to be passed with them, and a few days before death they became very dark." (It is proper to mention that this observation was not made by Dr. Bright himself, nor are the number of examinations nor any of the details stated.) The last case was one of *cancerous disease of the liver, involving the capsule of Glisson, the common duct, and the duodenum, which was ulcerated opposite the disease;* the *pancreas* was questionably healthy, but *its duct much obstructed and distended*, behind the obstruction, to the size of "the largest swan's quill."—(Case 8, p. 44). This case is earlier in date than all, except the first of those in which Dr. Bright observed the fatty evacuation, and therefore occurred before this symptom could have assumed the importance in his estimation which it afterwards acquired; but he assures us, from his own observation, that "on no occasion was the fatty matter detected, though the character of the stools was frequently noted." He also observes, that the occurrence of fatty evacuations in this case, without their having been observed, is very improbable.

The facts of which we have given above a very brief summary, but which will be found carefully detailed in Dr. Bright's paper, are considered by him as sufficiently to invalidate the conclusion that serious disease or derangement of the pancreas is *necessarily* or *constantly* accompanied by the peculiar symptom to which we have adverted. The strict inductive inference from the whole would be, that the occurrence of fatty evacuations is not necessarily determined by pancreatic disease, or by obstruction of the pancreatic duct, unless such disease or obstruction be such as completely to intercept the function of the organ; and that even in the case of very considerable disease of the entire gland, the fatty evacuation may be absent, provided the duodenum be sound or not much diseased. Taking these considerations

in connexion with those in the paragraph which we have quoted above from Dr. Bright's paper, it will be seen that as he remarks,—

"We bring the circumstances of the diseased structure in connexion with this symptom, within a narrow limit—*disease, probably malignant, of that part of the pancreas which is near to the duodenum; and ulceration of the duodenum itself.* These are the only two conditions which can be traced as being peculiar to all three cases."

[Hence we see that Dr. Bright's researches in 1832, have obtained a position of the greatest historical importance.]

The experiments of Bernard appear to show the remarkable rapidity and power with which the normal pancreatic secretion acts upon the neutral fatty bodies of the aliment, converting them into an emulsion resembling chyle. We say this in the full knowledge that many of the ulterior conclusions of Bernard on this subject have not stood the test of further inquiry, and that the careful and varied experiments of several impartial and well-known physiologists have led to results which must very materially invalidate those to which our scientific neighbours in France have, by their authorized tribunals, given so hasty and unreserved a sanction. After careful consideration of the whole subject, however, we cannot but acquiesce in the conclusion of Lehmann, as well as of Bernard himself, that though many other animal fluids possess the power, in a greater or less degree, of emulsionizing the neutral fats, the pancreatic juice is distinguished by this attribute in a high degree, and therefore is *probably* an important agent in the normal digestion of these bodies. It cannot, indeed, be admitted, as Bernard at first asserted, that the pancreas is the exclusive organ set apart for the decomposition and digestion of the fatty aliments; for the experiments of Bidder and Schmidt clearly prove that the decomposition and saponification of the fats is not a necessary part of the digestive process, and that the presence of the gastric fluid in the chyme tends to prevent that evolution of the fatty acids from their oils which takes place in contact with decomposing animal juices; and moreover, the emulsionizing of the fats and the absorption of milky chyle is proved not to be absolutely dependent on the pancreatic fluid, nor even on the pancreatic fluid and bile conjointly, but to be effected, in a certain measure, by the fluids of the intestine alone. While, therefore, we must admit that the normal digestion of fat is a process to which several *factors*, as it were, contribute—viz., the intestinal juices, and especially those of the duodenum, the pancreatic juice and the bile—it would appear highly probable that the pancreatic juice is among the most important and direct of the agents in the chylification of the fatty matters of the food; and that the bile, though not in itself possessed of much emulsionizing power, contributes powerfully, by an action (as yet imperfectly ascertained) upon the other juices above mentioned, to the digestion of the fatty matters in the duodenum and first portion of the small intestine.

Assuming for a moment the correctness of these propositions, it becomes of course of the greatest importance to science, to determine accurately to what extent the subtraction of any of the above *factors* influences the digestion of the fat. This branch of the physiological inquiry has not been neglected by those engaged in it: but the difficulties (as may readily be believed) of submitting some of these questions to the direct test of experiment are almost insuperable, and the results of such attempts appear, at first sight, hopelessly contradictory. Sir B. Brodie, in 1823, asserted that the fatty matters were not digested when the common bile duct was tied, and that the lacteals remained, in such cases, free of milky chyle. The observation was probably correct; but the experiments having been performed on cats, in which the ductus communis choledochus receives the pancreatic duct, as in man, the inference as to the effect of withdrawing the bile from the intestine cannot be admitted; and the subsequent experiments of Blondlot, Majendie, and others, together with numerous cases of jaundice, constantly under the observation of the physician, show that animals can exist for a protracted period without loss of flesh, although little or no bile reaches the intestine, the excrements being usually in such cases devoid of any marked excess of fatty matters, even when ordinary food, abounding in oil, is taken in nearly the usual quantity. Bernard's experiments appear to show, that the digestion of the fat is wholly arrested by the withdrawal of the pancreatic secretion. He has found that the pancreas may be entirely destroyed in dogs, by filling its ducts with oil (an ingenious procedure, capable of being turned to

account in further experiments upon this subject), and that the animals so treated remain for a time alive, with a voracious appetite, and capable of digesting food to a certain degree; but that they ultimately die emaciated, that they form no milky chyle, and discharge the fatty matters of the food unaltered, *per anum*. We feel that, in the present state of the inquiry, we are not justified in accepting these statements to the full extent, especially as a quantitative analysis of the ingesta and egesta in these cases might have been easily performed, and would have exactly determined the extent to which the removal of the pancreas incapacitates an animal for the digestion of fat. It is well known that fatty substances, when given in sufficiently large quantity, are passed unaltered or imperfectly digested even in healthy persons; and hence the emancipation of the fatty evacuations of M. Bernard's dogs may have indicated only an impairment and not a suspension of the digestion. This is still further rendered probable by the curious experiments of Brunner, published in 1709; in which a large part, if not the whole, of the pancreas was excised or destroyed in the dog, the health and activity being maintained, and the functions regularly performed for a considerable time afterwards, to an extent which is scarcely consistent with the idea that the digestion of the fat was wholly or nearly suspended. We feel, therefore, that the solution of the question, as regards the pancreas, must depend on new experiments, after the manner of those above mentioned, and performed with strict regard to quantitative results: the animals should be weighed before and for some time after the operation, and its immediate effects; they should be kept alive as long as possible, and careful researches should be instituted into all the secretions and excretions. In the mean time, it is probable that the removal or destruction of the entire pancreas will be found—not, indeed, altogether to suspend the digestion of fat, but—to impair it so much as to be inconsistent with prolonged life; although it appears that a very small remaining portion of the organ is sufficient to enable an animal to live for at least several months.

[M. Moyse refers to a case in the Boston Museum which is of considerable interest.]

"The patient was a labouring man, forty years of age. Thirteen years before death he was greatly reduced by hemorrhages from the bowels, and to this he always referred as the origin of his disease. Three years before death, he had a second attack, which was quite severe, and lasted several weeks. There was great tenderness in the epigastrium, with frequent returns of diarrhœa and discharges of blood, the functions of the stomach being, meanwhile, sufficiently well performed. In December, 1836, he was attacked with febrile symptoms, pain and obstinate constipation, followed by severe diarrhœa: *the discharges contained no bile*, but consisted in a great measure of blood, and the epigastric tenderness was extreme. In about a fortnight *a fatty substance was first noticed*, and from this time it was observed, more or less, in every discharge from the bowels, until the month of May, when it entirely ceased. The following report was made during the first attack:—'Patient declares that for six weeks he must have discharged, on an average, half a pound of this substance daily; *is also positive that he had no discharges of fat, except after eating meat or food cooked in fatty matters; that they would cease in twenty-four hours after abstaining from meat, and return again after resuming it; his wife, however, is confident there is no such connexion.*'"

"After this there was a partial recovery: the appetite at first good, often craving afterwards indifferent; the alvine evacuations uniformly deficient in bile after December; complete jaundice for five weeks before death, which took place on the 16th of September, a tumour having been detected in the epigastrium in August, and signs of advanced phthisis being known to exist.

"On opening the cavity of the abdomen, a large fluctuating tumour of a regular oval form, was seen below the right lobe of the liver; the duodenum ran over, and almost around it. On incision, it was found to contain about 14 ounces of a bloody-looking serous fluid, without coagula, not viscid or greenish, *and without any appearance of fatty matter*. The tumour or cyst measured four inches by three in extent; it was evidently formed by a dilatation of the pancreas; two calculi adhered to its inner surface, near the orifice of the duct, which was entirely obliterated; they had the usual characters of pancreatic concretions, and were found to consist of carbonate of lime. The remainder of the pancreas, forming the left extremity of the organ, was about two inches in length, much contracted, and feeling very hard; the duct

itself was considerably enlarged, and opened freely into the cavity of the sac. On slitting open the common duct, a portion of it, which formed part of the parietes of the cyst, was found in a very sloughy condition, it being evident that an opening was about to be formed, if it did not already exist, between the sac and the hepatic duct."

[Mr. Alfred Clarke, of Twickenham, in the *Lancet* for August 16th, 1851, relates a very remarkable case, and again in the Museum of St. Bartholomew's Hospital, there is a preparation illustrating a disease of the pancreas, likewise similar. We may conclude, therefore, that in cases of fatty alvine evacuation, the pancreas is probably the most important seat of the disorder. Several of the cases, however, would appear to show that the duodenum is not always necessarily involved, and that simple or malignant disease of the pancreas alone may be sufficient to account for the symptoms.]—*Brit. and For. Medico-Chir. Review, July*, 1853, *p.* 154.

50.—ON AN ALVINE CONCRETION, CONSISTING OF CHOLESTERINE.

By Dr. William D. Moore.

[This concretion seemed to have been formed in the intestinal tube. The patient was a young lady. There had been obstinate constipation and colicky pains for some time; and it was at length voided per anum.]

She had never suffered from jaundice, pain, or other symptoms, whereby the passage of a gall-stone could be inferred. The calculus in size and shape resembled a pullet's egg: it weighed 210 grains, but was superficially lighter than water, as was proved by its floating when placed in a vessel of that fluid. Its outer surface was tubercular, and exactly resembled that of a mulberry urinary calculus. Some shining scales were visible externally, and also throughout the mass when cut. On the application of heat it first fused, and then burned with a bright flame. It dissolved completely in boiling alcohol, and on cooling separated from its solution, as was seen under the microscope, in broad tubular crystals of cholesterine, which, with a small admixture of fæcal matter, composed the bulk of the concretion.

Many writers have supposed that because calculi found in the intestines, or voided *per anum*, have been proved to consist chiefly of cholesterine, they must necessarily have formed in the gall-bladder, and from that have passed either through the ducts, or by ulceration, into the intestine; and, in support of this view, it has been argued that, where the parts are neither inflamed, nor in a state of spasm, the ductus choledochus may be considered to be in a passive state, admitting of an easy and gradual extension of its fibres, so as at length to allow of the free egress of the stone. It has also, indeed, been clearly proved by the example of a case in which a biliary calculus, in passing to the bowel, about a fortnight before being voided *per anum*, induced jaundice, yet gave no pain; that "the progress of gall-stones (even when inordinate in their dimension), through the ducts, is not disproved by the absence of pain from the epigastrium."

However admissible the foregoing facts may be, and conclusive as the case detailed by Dr. Wilson is, in establishing the proposition he advances, a little consideration will, I think, show, that the fact of a calculus consisting in whole or part of cholesterine, is not sufficient to prove it to be of biliary origin. For cholesterine is, according to Berzelius, "universally diffused through all parts of the body, and dissolved in its fluids." Simon states that it is a normal constituent of the bile, of the brain, and of the spinal cord. "It has been found," he adds, "in the blood; in the vernix caseosa; in the fluid of hydrocele; in an encysted tumour of the abdomen of a woman; in the ovary and testicle in a diseased state; in an abscess of the tooth; in a scirrhous structure in the mesocolon; in fungus medullaris; in medullary sarcoma; and in a vesical calculus extracted from a dog." Such being true, it is of course easily conceivable that a concretion composed of cholesterine might form under predisposing circumstances, in some portion of the intestinal tube.

Dr. Douglas Maclagan was aware of the fallacy of inferring the origin of such calculi from their composition, for in his paper on the Constitution of Intestinal Concretions, published in the London and Edinburgh Monthly Journal of Medical Sci-

ence for September, 1841, he observes, after describing a case in which vast numbers of small concretions had been passed, in reference to the question, as to whether these were a variety of gall-stone, that "the presence of cholesterine is no criterion. This substance is not only," he observes, "contained in the bile, and is thus poured into the intestinal canal, where it may easily be deposited; but it is frequently found in situations totally unconnected with the biliary organs." This statement is so very explicit, that I should not have thought it necessary here to enter upon the question, did I not find that many are still of the opinion that concretions of cholesterine must necessarily be derived from the hepatic system.

In conclusion, with respect to the patient, in reference to whose symptoms Sir Henry Marsh was consulted, it is clearly possible that the concretion voided by her may have been, not of hepatic, but of intestinal origin; and it appears to me that, if this be admitted, it will also be allowed to be more probable that a large calculus such as I have described should have formed in the intestine, than have passed in a young subject from the hepatic system to the bowel, either through the ducts or by ulceration, without giving rise to pain or jaundice.—*Dublin Quarterly Journal, August*, 1853, *p.* 247.

51.—OBSERVATIONS ON A CASE OF FÆCAL OBSTRUCTION.

By Dr. Robert Christison.

[Dr. Christison remarks upon the frequency of habitual constipation amongst the better classes of society. Instances in which the bowels are only relieved once a week are comparatively common, and he records two cases of patients, aged 60 and 70, who stated that they had never had their bowels moved more than once a fortnight during their whole lives. In the case about to be related the patient had not had a stool for three weeks.]

On admission he had no appearance of any suffering. He seemed a fresh, vigorous, active, cheerful man. He took his food tolerably well; the pulse was natural; and the tongue was only a little furred. "The abdomen," to quote the Hospital journal, "is much distended, especially in the iliac regions, where there are two large prominent swellings projecting laterally, so that the crest of the ilium on each side is quite sunk, the tumours projecting much beyond the bones. There are different irregular swellings at different parts of the abdomen, especially in the track of the colon. Over some of these points percussion is quite dull; over others it is tympanitic. The circumference of the abdomen, where largest, is 39½ inches."

As it was judged unsafe to give him active purgatives by the mouth at once, in case of the great gut being firmly obstructed with hardened fæces, a turpentine injection was properly administered by the clinical clerk in charge of him. The result was "a prodigious discharge of fæcal matter of all degrees of consistence," much of it composed of very hard scybala. A dose of jalap and calomel given immediately after this forerunner, brought away also a great mass of fæculent matter. Next day, being quite well, but with the abdomen as large as ever, another similar dose occasioned only an ordinary discharge. On the third day, the swelling being equally great, though now quite uniform, and everywhere clear on percussion, I gave him what has always appeared to me the most effectual of all safe energetic purgatives in cases of simple fæcal accumulation—two drachms of oil of turpentine with six drachms of castor oil in the form of emulsion. But he had only two scanty loose discharges, and the belly continued in the same state, presenting especially the singular enlargement and overlapping of the iliac regions.

It was now apparent that, owing to long continuous distension of the bowels with fæces and gases, their muscular coat had lost its tone, in some regions at least, and especially in the cœcum and descending colon. It was then proposed by the clinical clerk to resort to galvanism for relief from this paralytic condition; which suggestion was at once adopted. It is more than twenty-five years since galvanism was recommended as a useful remedy in cases of obstinate constipation; and we can easily see that it may be useful, and upon what principle it acts. The first way of using it was by directing the galvanic current from the mouth to the arms; and in that way it seems to have been most effectual and prompt in some cases. But its

action is thus rather painful; and ulterior observation has shown that passing the current in various directions through the abdomen itself may be sufficient. This remedy seemed even more applicable to the state of our patient after the bowels had been cleared out. And accordingly it acted with wonderful energy and success. After the current had been passed for some time from before backwards, as well as from side to side, he had, in an hour, a copious evacuation, in three hours another, and next morning a third. Flatus was also discharged in abundance; and the abdomen fell greatly, but still not completely, above all in the iliac regions. The pain of the galvanic action, however, had been so great that the patient begged to have a day's respite. In fact, he declared his willingness, and confirmed it with an oath, that he would rather be shot again than submit to be galvanised a second time. On the second morning, however, the remedy was applied more gently, and on two mornings subsequently. He had a daily discharge from his bowels, and sometimes two. The abdomen had now become natural in size and form. Since then he has had a natural evacuation every morning, without aid from either laxative or galvanism. He was dismissed after being fourteen days in hospital.

This is a case a little out of the common run, but not without instruction; and I have therefore thought it well to bring the chief circumstances under your notice. It is an excellent illustration of the influence exerted by galvanism over the animal functions. It appears to me to hold out a probability that the same remedy may prove serviceable in restoring the tone of the intestinal muscles, in other forms of inconvenient chronic flatulent distension of the abdomen.—*Monthly Journal of Medical Science, Sep.* 1853, *p.* 252.

52.—CASES OF COLIC.

By Dr. Robert B. Todd, F. R. S., &c.

[The following excellent remarks upon the treatment of various kinds of colic, are from a clinical lecture upon the subject, delivered in King's College Hospital:]

Whether the case be one of simple colic, or gouty colic, or colic resulting from lead poisoning, you must endeavour to get the bowels to act freely. What you want is, to create a free channel through the intestine; and this you may effect by purging and by the administration of enemata. The general plan of treatment which I commonly pursue with most cases of this kind in the hospital, is very much that which was suggested, some years ago, by Dr. Wilson, of the Middlesex Hospital. We commence by putting the patient in a warm bath, and, while he is there, a warm water enema is administered; when the first enema is returned, a second quantity of warm water is forced up, so as to distend the colon; this is done several times in succession. Frequently a cure is effected by these means without any further treatment: but it is often necessary, in order to empty the bowels fully, to give a purgative. And that which answers best in these cases, is a combination of compound extract of colocynth and croton oil. A drachm of the former, and from one to three drops of the latter, are divided into twelve pills, and one pill is given every three hours until the bowels act. The stomach bears these small and frequently repeated doses of the oil better than a full dose administered at once, and the operation of the medicine is more effectual. With respect to antiphlogistics,—the abstraction of a little blood sometimes does good in colic; but, as a general rule, you will find that bleeding only prolongs the convalescence of your patient. Leeches, also, are occasionally beneficial, in cases where there is abdominal tenderness; but the majority will not require them. You will find great benefit from the careful use of opium, in the more obstinate and complicated cases. You may give it simply to relieve the pain, when that is excessive; or where there is great exhaustion, and the patient needs repose, you may give it freely to produce sleep; and, in administering it with this view, you will not find that your ultimate object will be retarded. On the contrary, the exhibition of opium often gives tone and power to the muscular coat of the bowel, and promotes the favourable action of purgatives. Moreover, opium is a valuable preservative against abdominal inflammation. When you keep up a certain opiate influence, your patient will be less liable to peritonitis, or to enteritis. Opium also regulates and moderates the action of purgatives; and this is

worth your always keeping in mind, for, in the use of purgatives, in cases of intestinal obstruction, it is often true, "the more haste the worse speed."—*Med. Times and Gazette, July* 23, 1853, *p.* 82.

53.—ON THE TREATMENT OF TAPE-WORM BY THE MALE-SHIELD-FERN.

By Dr. Robert Christison.

[Dr. Christison has received many communications as to the result of the oleo-resinous extract of the above plant in the treatment of tape-worm. He says:]

In every case without exception the worm was discharged after a single dose, and usually in one mass. In some it was brought away without any laxative, and occasionally in that case with very little feculent discharge accompanying it. For the most part there was no pain or other uneasiness, either before or during its action. This was the case even in an instance in which the tendency to the disease had existed for no less than seventeen years, and in which the worm evacuated was the largest and strongest I had ever seen. Several patients, who had often previously used other anthelmintics, have noticed this absence of uneasiness during the action of the male-shield-fern, as something different from what they had experienced invariably before. It must be allowed, however, that several other individuals have complained of griping, sickness, or indescribable discomfort in the abdomen, and sometimes even of vomiting. But it admits of question, whether these occurrences depend on any direct action of the remedy on the human body, or upon the disturbed condition of the worm under the poisonous operation of the remedy on it. In fact, we have yet to learn that the male-shield-fern exerts any action on the human stomach or intestines, in the course of its deadly action on the parasitical inhabitants of them.

In only two cases have I heard of the disease having reappeared; and in both, the interval was about six months. Of course there may have been others which I have not heard of. When the worm does not show itself in the discharges for some months after the effective operation of the remedy, I think it is more consistent with reason to say that the disease had returned, than to hold with some that the cure was imperfect, that an ovum was left to reproduce the worm, or that the head had remained to sprout again and renew the multitudinous joints behind it. Nevertheless, I have latterly advised the subjects of tænia to repeat the dose of the extract once a month for a little, until joints shall have ceased for some time to appear. In none of these cases have any joints been subsequently seen in this way. But it is a very simple precaution to take occasionally a remedy so little disagreeable. A patient, as to whom I was consulted by Dr. Graham, of Cupar, had been liable to a return of the disease every few months for nearly twenty years, during most of which time he was in the army, and got oil of turpentine, with partial success, from the successive medical officers of the regiments in which he served. In this instance, I have recommended an occasional dose of male-shield-fern as a security. The first dose brought away a very large worm without occasioning any inconvenience; and no joints had appeared in the discharges eight months afterwards.

At first I gave eighteen grains for a dose. But afterwards, and, I admit, without any reason except a desire for greater certainty, I have advised an increased dose of twenty-four grains. On the whole there has been less complaint made of uneasiness during the operation of the remedy since the larger dose has been used,—possibly because the worm is killed more speedily, and that the drug has no inconvenient action of its own upon the human alimentary canal, although given even in the larger quantity.

It was stated above that the ethereal extract of male-shield-fern had not failed in a single instance to bring away the worm with the first dose. In one case, which occurred in this city, it did seem to fail. But on repetition of the trial, with an extract prepared under my own instructions and superintendence, the effect was complete and speedy, as in all the other cases. On proceeding to inquire into the circumstances of the previous trial, I found that the extract had been obtained from a druggist, of unquestionable skill, who had made it for the first time; and it appeared that his preparation was of firmer consistence and more resinous-like than

what I had been accustomed to use and recommend as made by another druggist in Edinburgh; and its taste was decidedly different. This imperfect extract proved to have been prepared from powdered root obtained from London; so that it was reasonable to conclude that the wrong root had been collected, or that it had been incorrectly dried. I believe that every druggist in good business in Edinburgh can now supply the genuine article.

As no experiments have yet been tried with other ferns, the selection of the proper species, *Lastræa Filix-mas*, must be considered for the present an important condition of success. Several other ferns, one common, others not so, may be readily mistaken for the true one by an uninstructed, or careless, or unconscientious collector. It is itself luckily very common. Except the *Pteris aquilina*, no other fern is so familiarly seen, in every dell of Scotland at least. The only other common one, and which, indeed, often grows in immediate proximity, the *Athyrium Filix-Femina*, is known by the frond; which, whether luxuriant in summer, or withered in winter, is easily recognised to be doubly-pinnate, and not, as in the true plant, singly-pinnate.

Peschier says the plant is efficacious chiefly between May and September, inclusive. We may trust so good an observer for the fact, that the root is efficacious in that interval. But it so happens that all my own specimens of the oleo-resin were made with fresh roots collected in February, two months at least before the young fronds begin in Scotland to peep above ground; and the preparation, which has been got in the shops of Edinburgh for almost all the cases reported to me, was prepared about the same time by one druggist. Hence I suppose the root is quite efficacious enough at any season, if it be used fresh. I know nothing of the effect of keeping the root long. Peschier thought the oleo-resin began to lose activity in a year. I have known it used of that age with complete success.

I might easily illustrate these statements, according to the rule of the day, by a long list of cases, with uniform details, tiresome by their reiteration. But they all come to the same thing as the last which was communicated to me the other day by a late pupil, Dr. J. C. Davies, of Holywell, Flintshire, in the following terms: "According to your advice, I sent to Edinburgh for the male-shield-fern, and have administered it in two cases as directed by you, with the most satisfactory results."

In conclusion, my experience of the male-shield-fern corresponds precisely with the much more extended observation of Peschier, at Geneva, more than a quarter of a century ago. I am persuaded, therefore, that it is easy, with a few simple precautions, to obtain from a common indigenous plant a more efficacious and less disagreeable anthelmintic for the expulsion of tænia, than from either the Abyssinian kousso, the Continental pomegranate, or American turpentine. It is surprising that Peschier's observations, made on a very large scale indeed, have attracted so little attention in Britain until the late notice in the Edinburgh Monthly Journal. I can only say this has not been for want of a strong recommendation on my own part, both in my Lectures constantly since 1833, and also in my 'Dispensatory,' when first published in 1842.—*Monthly Journal of Med. Science, July*, 1853, *p.* 47.

54.—ON THE PRODUCTION OF THE FATTY CONDITION OF THE LIVER.

By Dr. C. Hanfield Jones, F.R.S., &c.

[Although a great deal has recently been written upon the subject of fatty liver, yet, we may still ask the question—What really constitutes true fatty degeneration of this organ?]

Is it to be regarded as a simple increase of the quantity of oil naturally existing in the hepatic cells, or is it a further and more important change? I am much inclined to think that the latter is the case, and that a real distinction exists between the condition of oily accumulation when there is simply an undue quantity of oil present in the parenchyma, and that of true fatty degeneration when the natural structure is more or less altered and destroyed. To illustrate this I will quote first the instance of a kitten, which had been fed for about a week on food containing

much oily matter. The liver was of a dull greyish-yellow tint, in the first stage of hepatic venous congestion. Sections viewed under the microscope were utterly opaque, and showed both the cells and intercellular substance loaded with oily molecules; the accumulation of oil was equal everywhere. The ultimate ducts were dissected out and found natural. Here all that had occurred was the addition of a quantity of oil to the hepatic parenchyma (not to the ducts), there was *no degeneration* of the cells. In contrast to this instance I will place the notes I made of the condition of two livers taken from the bodies of two persons who died in St. George's Hospital. In one "the liver was in a complete state of fatty degeneration; the oil drops, however, did not seem to be enclosed in distinct cells, but to lie in an indistinct granular or semi-fibrous stratum; scarce any distinct cells were to be seen." In the second, the liver being also in a state of complete fatty degeneration, I observed that the cells were, for the most part, destroyed, and that only films of granular matter remained; the number of free nuclei also seemed to be fewer than usual. In these two cases it was quite evident that the natural cell structure of the liver was, to a great extent, destroyed, that a real degeneration had taken place; and this I have repeatedly observed in most cases of fatty degeneration of the liver, occurring in persons who have died of various diseases. Whether a liver, whose cells are thus destroyed, can recover its natural condition, is a question of much interest, but one which it seems impossible to answer.

A circumstance of much interest, which seems still further to indicate the degenerative character of the fatty transformation of the human liver, is that in such livers I have almost invariably been unable to detect the existence of sugar, and this is confirmed also by the experience of my friend Mr. Blyth. This, however, was not the case with the kitten's liver, who had been fed on fatty food,—it yielded, on analysis, a full proportion of saccharine matter.

Another point which has not been much noticed is the peculiar limitation of fatty degeneration to the margins of the lobules, which is very frequent. I think the change does not consist merely in accumulation of oil in the marginal cells, but that destruction of them actually takes place. A liver affected in this way, presents the lobules most perfectly marked out by a zone of opaque matter; this varies in different cases somewhat in width, but may be said generally to occupy about one fifth or one fourth of the distance from the margin to the centre. I can give no sufficient explanation of the tendency of oil to accumulate in the marginal cells; it may, perhaps, in part depend on the circumstance that the stream of portal blood first passes through them; but this does not at all account for the converse occurrence, viz., oily accumulation in the central cells, which is sometimes very marked in the healthy livers of animals. There is commonly but little yellow matter in the cells of livers deeply affected with fatty degeneration,—sometimes, however, it is sufficiently apparent in a few here and there; the common condition of livers which present more or less of the "nutmeg" aspect, is oily accumulation or fatty degeneration of the margins, with heaping up of yellow molecules in the central cells around the intra-lobular vein.

Fatty degeneration of the liver, when complete, may occur in very different diseases; it is by no means peculiar to phthisis, as is well ascertained. Out of nineteen cases which I examined microscopically, four or five only had any connection with phthisis; the others occurred in diseases of various kinds, which, for the most part, but not invariably, had produced great emaciation.

Another kind of degenerative change is present in the much more rare *lardaceous* liver. One specimen of this kind which I examined, had the following characters: It was enlarged, bulky, of solid feel and glossy aspect, having a yellowish tint with some whitish spots, and containing very little blood. Thin sections under the microscope showed some of the lobules in a pretty natural state, the cells perhaps rather enlarged, and arranged very much in a linear manner. In other lobules there was a manifest infiltration between the cells, of an homogeneous, highly refracting substance, much resembling concrete oily matter; this was very abundant in some parts, so much so as to compress the cells and reduce them to mere bands anastomosing together, and producing the appearance of a plexus containing the homogeneous matter in its meshes. In many spots, especially in the vicinity of the deposited substance, the cells were deeply tinged with yellow matter. The refracting matter in another instance consisted of spherical, oval, or irregular shaped masses, which

had somewhat the size and figure of the natural cells, but did not, I think, result from a transformation of these. Liquor potassæ added to thin sections under the microscope reduced the deposited matter to mere filmy fragments, and diminished considerably the refracting power; its action upon this substance and the surrounding cells, many of which contained much oil, was very different; the latter becoming more transparent exhibited their oily contents with great distinctness; the former, though quite translucent, showed no trace of oily matter. The minute ducts in the latter specimen, as well as in the former, were of natural appearance. I have several times examined spleens from the human subject, which contained a great quantity of matter precisely similar in appearance to that which was here deposited; its seat in the spleen appears to be chiefly the Malpighian bodies whose natural cell structure it replaces, and then extending outwards, brings about an atrophy of the red pulp, which occurs to such an extent that at last mere red streaks are seen separating the translucent glistening substance, and the natural deep colour of the organ is lost. The term by which Rokitansky designates this peculiar deposit, is the "lardaceous" (speckig), and the pathological relations he assigns to it are with "constitutional disease of the vegetative system, especially with scrofulous and rickety disease, with syphilitic and mercurial cachexia," and occasionally as a sequel of intermittent fever. Dr. Budd recognises this condition as a scrofulous enlargement of the liver; this I think is so far correct, as intimating its relation to scrofulous disease, but it ought clearly to be understood that the deposit is totally different from tubercle, and is, indeed, so far as I know, *sui generis*.

The minute ducts in the fatty and last described condition of liver have appeared to me pretty natural; this fact renders it more easy to understand how, with so considerable alteration of the parenchyma, bile can still be secreted.

Rokitansky, describing cirrhosis, says—"We are not of opinion that granular liver always takes its origin in the same fundamental affection; we are inclined to adopt two morbid states as the essential and original anomalies which give rise to granulations in the hepatic parenchyma as a secondary affection. In one case there is a morbid development of the capillary gall ducts (the so-called secreting tissue), an accumulation of the secretion, and probably also an hypertrophy of the parietes of those vessels giving rise to the nutmeg liver and to an obliteration of the capillary blood-vessels, the so-called vascular substance." . . . . . "In the second case, the original affection of the hepatic parenchyma in granular liver is proved, by the post-mortem appearance of the granulations, to consist in a slow chronic inflammation. This induces a gradual obliteration of the parts attacked, and their conversion into fibro-cellular tissue, the amount of which varies in proportion as the processes of absorption or organisation predominate in the inflammatory product. This secondary metamorphosis, from not occurring uniformly, results in a subdivision of the organ into larger and smaller scattered compartments, which present the characteristic rounded form of the granulations in the same ratio as they correspond to single hepatic lobules."

Dr. Budd, in his chapter on Cirrhosis, describes it as "the consequence of adhesive inflammation in the areolar tissue about the small twigs of the portal vein, by which serum and coagulable lymph are poured out. The serous part of the effusion gets absorbed, and the fibrine contracts and becomes converted into dense fibrous tissue, which divides the lobular substance of the liver into well-defined masses," &c.

I cannot say that I have observed any condition corresponding to the first form of cirrhosis which Rokitansky describes. A morbid development of the capillary gall ducts must mean a morbid enlargement of the hepatic cells of the lobules, and such I have never seen in this disease. Dr. Budd's description expresses the opinion ordinarily received, to which I have but little to add that can be esteemed new. I think, however, that a somewhat different view may be taken of the nature of the morbid change constituting cirrhosis, and that some of its different forms may be more exactly traced.

In some cases, no doubt, the fibrous tissue of the Glissonian sheath is affected with what may be truly called adhesive inflammation, attended with the effusion of coagulable lymph and serum. These cases will be marked by tolerably distinct symptoms—pain in the side, vomiting, fever, perhaps jaundice, as Dr. Budd enumerates them. The portal canals are the seat of the inflammation,—chiefly, I believe, the larger, and not to any great degree the smaller, canals or the fissures. In other

instances, which I believe are more numerous, the same parts may be affected, but the nature of the change is different. The fibrous tissue of the sheaths undergoes thickening and condensation, but not as a consequence of effusion of lymph and serum in an acute attack; the process is much more of the nature of degeneration, more akin to the chronic thickenings which are so often observed in fibro-serous membranes, and which are often coincident with this condition of the liver. The result of the above changes, when they do not extend to the smallest portal canals and interlobular fissures, is, I believe, the common hob-nail condition of the liver. If the thickening and condensation proceed further, and affect the sheaths which surround and invest the lobules, then the condition is different, and corresponds very nearly with that which I described in a communication to the Pathological Society, three years ago, under the name of "nutmeg liver." This description I subjoin, but would remark, at the same time, that in several of these cases I have no doubt that there takes place also a deposition of unhealthy plasmatic fluid in the substance of the lobules, which solidifies them, and tends to increase still further the atrophy of the cells which the defective supply of blood induces. It is difficult, in examining the *débris* of the parts thus degenerated, to distinguish accurately, in all particulars, between what should be regarded as cause, and what as effect; but, though aware of this, I still am strongly inclined to believe that such a process as I have indicated does actually affect the lobules themselves, and that the unhealthy nutritive process, which is the essence of cirrhosis, may manifest itself chiefly in either of three situations:—1. In the larger and middling-sized portal canals, excluding only the smallest. 2. In these last, and in the fissures. 3. In the smaller canals and fissures, and in the substance of the lobules. The first form results, as said, in the common hob-nail liver; the second and third produce tough, firm, dense livers, which are sometimes termed "brawny."

If, indeed, the view should prove correct which is entertained by some eminent pathologists, that fibrine is an excrementitious or effete substance—not, as was formerly supposed, one of the highest importance to the renewal and growth of tissues—then the existence of such a diathesis and morbid state as I have just alluded to would become in a still higher degree probable. We should then recognise the fibrinous as a form of excrementitious plethora, in which a fluid material, characterised by a tendency to spontaneous coagulation, and existing in the blood probably in undue quantity, produced injurious effects, by slowly perverting the nutrition and spoiling the texture of various parts: we should perceive a connection between various phenomena which now appear isolated. The deposition of vegetations, so called, on the valves of the heart, or the deposit of fibrinous masses in the spleen or elsewhere, would then appear as instances of tumultuous and excessive formation of fibrine in the blood, which was thus cast out hurriedly in these parts. The presence of fibrinous nodules beneath the capsule of the liver, or on the pulmonary pleura, would indicate a process of a similar but much more gradual nature. All the various thickenings of fibrous or fibro-serous membranes, stiffening of the valves of the heart, contraction of its orifices, shortening of its cordæ tendineæ, many of the common pleural adhesions, white pericardial patches, would be properly ranked as having their origin in a similar morbid condition of the blood. They would appear then as manifestations of a general state, and not as local affections. The common fibrous tumour of the uterus would be a particular localisation of the general diathesis. There would appear reason to consider the large, firm, dense kidney, with its adherent capsule, as another result of such morbid action. The adhesion of the capsule to the surface is evidently the result of a similar change to that which thickens the capsule of the liver, and the increased bulk and coarser condition of the epithelium of the tubes may not improbably be attributed to its having undergone a kindred change, modified, of course, by its own peculiar nature. I cannot help remarking that no term seems to me, in many cases, so exactly to describe the condition of the renal epithelium in this condition of the organ as the word *stiff;* comparing the morbid structure with the healthy, it gives one the idea of being as much incapacitated from undergoing its normal chemico-vital changes as a stiff and rigid aortic valve is from following its natural easy movement. Again, under the head of fibrinous disease, we should range various forms of so-called chronic pneumonia, in which, with little appearance of acute inflammation, there has taken place exudation into the cavities of the air-cells, and complete condensation of

the tissue. Some of these cases, by the nature of the exuded material, would form a connecting link between chronic pneumonia (the fibrinous) and the recognised tubercular infiltration. The above are all instances of extra-vascular change produced by the fibrinous disease; one, however, we may refer to as originating in the interior of the vessels, and occasioning by its arrest of the circulation irremediable gangrene of the parts thus deprived of their supply of blood. I allude to the spontaneous coagulation of the blood within the vessels, of which several instances have lately been recorded, and which can be ascribed with no kind of probability to any other cause than such a state of the blood as we are now considering.

The preceding is rather a long discussion, but may be excused, I trust, from its intimate connection with the pathology of cirrhosis.

The form of cirrhosis which produces the "brawny" liver often co-exists with dilatation and hypertrophy of the heart, the former predominating more or less. The retardation of the circulation thus occasioned throws the blood back upon the large veins; and the hepatic veins in particular, with their radicles in the centre of the lobules, are in consequence much congested. I am strongly inclined to think that this congestion of the central part of the lobules has much to do with the peculiar alteration of the cells which there takes place, and which is almost exactly co-terminous with the congestion. The bile pigment is in all probability derived from the colouring matter of the blood, and it is worth noticing that this yellow matter is especially connected with those parts which are especially the seat of sanguine congestion. Hepatic venous congestion of the first degree is far the most common, and it is in the same part which this occupies, viz., in the centre of the lobules, that we find almost invariably yellow matter present in the cells.

Cirrhosis is sometimes combined with fatty transformation; a section then presents opaque inlets, the lobules gorged with fatty matter separated by wide, more transparent spaces, which are the enlarged fissures and spaces occupied by new formed fibroid tissue.

The ultimate ducts in cirrhosis are of course involved in the dense fibroid tissue, and are more or less atrophied by its pressure; their nuclei appear stunted and starved, and the structure is sometimes altogether lost, at least the ducts can no longer be discovered. Usually, however, by the aid of acetic acid they can be seen pretty readily in the widened fissures and canals.

Jaundice manifestly results from the conveyance into the blood of biliary pigment, that constituent of the bile which is certainly excrementitious and intended to be cast out with the fæcal matter. In most cases there is retention of the yellow matter in the liver, from a mechanical obstacle to its flow into the intestine, or from inaction of the excretory ducts; the retained matter, which, however, is not in excess, being absorbed into the blood instead of passing out with the secretion. In other cases it seems to be formed in excessive and unnatural quantity, as in the acute yellow atrophy of the liver, and perhaps in diseases of the heart, producing great congestion of the veins. It is extremely common to find yellow matter in the cells of the central parts of the lobules in cases of different description quite unattended with any jaundice; this is so frequently the case that it really seems probable that it results from the congestion of the intra-lobular veins and surrounding capillaries which takes place during the last hours of life. Great dilatation of the cavities of the heart, with consequent retardation of the circulation, produces most remarkable yellow engorgement of the central cells of the lobules, and this condition is, I think, not unfrequently accompanied with marked jaundice. In this case, however, I believe there is no cessation of the flow of bile into the intestine; the function of the ultimate ducts and of the exterior cells is still performed; and there seems only to be increased production of yellow pigment in the central cells. It must be borne in mind that this yellow pigment as it exists in the cells does not evidence the presence of biliary matter, of cholic acid, or its conjugates. The yellow matter can be extracted by alcohol, and gives the characteristic re-action of bile-pigment with nitric acid; but Pettenkoffer's test decides against the presence of the organic biliary acid. The deep colour of the urine in jaundice also seems to depend solely on the presence of the pigment; no trace of cholic acid is often discoverable. I conclude, therefore, that in most cases jaundice results from the absorption into the blood not of completely formed bile, but of one of the constituents only, viz., the yellow pigment. This takes place, (1) when a mechanical obstacle prevents the flow of bile

into the intestine through the duct. com. choled.; the bile then accumulates in the larger ducts and distends them: it continues to be secreted for some time, but afterwards accumulation of yellow matter takes place in the cells, from which it is no longer freely extracted by the elaborating ducts; (2) when inaction of the elaborating duct occurs. This is the commonest case; the cells become filled with yellow matter, as before, because it is not withdrawn from them; (3) when, with or without impairment of the action of the excretory ducts, an increased quantity of yellow pigment is formed in the parenchyma of the liver.

I may quote here some remarks from Prof. Lehmann's work on Physiological Chemistry, which seem to me not only to bear out the opinion he adopts, that the components of the bile are not formed in the blood, but also to support the view I have maintained, that the bile is not completely formed in and by the hepatic cells, but that this is effected by the action of the ultimate ducts. Lehmann says, "It is just in disease of the parenchyma of the liver that jaundice very seldom occurs; in fatty liver, bacony liver, and the rare tuberculosis of the liver, certainly never; even in granular liver and inflammation of its substance but seldom. Jaundice only presents itself constantly in diseases of the gall passages, and in acute yellow atrophy."

Now, if with these various alterations of the parenchyma of the liver bile can still be formed, as we know it often is, it seems highly probable that some other apparatus besides the cells has a large share in the formation of this secretion, or at least is capable of taking such.—*Medico-Chirurgical Transactions*, 1852, *p.* 259.

55.—*On the Effects of Cholagogue Medicines, and some Remarks on the Morbid Changes in the Liver.* By Dr. C. Hanfield Jones, F.R.S.—[After alluding to some of the remarkable peculiarities with regard to the structure of the liver, Dr. Jones proceeds to relate a large number of experiments, illustrating the action of this class of remedies upon various animals, and the general result is briefly as follows:]

Mercury, muriate of manganese, and colchicum, are the only ones which seem to increase the production of yellow matter in the cells of the liver. I have placed them in the order of their potency. That they also increase the production of glycocholate and taurocholate of soda I think very probable; but unless we were assured that the quantity of these principles is always proportionate to that of the yellow pigment, which does not seem to be the case, the above experiments say nothing as to this point. It is clear that the cholagogue action of a medicine, its emulging effect on the ducts, is distinct from that which it exerts in the *production* of biliary pigment. Jaundice has been known to come on during a mercurial course, and apparently an effect of the medicine. I have at present a patient under my observation (one of Dr. Chambers in St. Mary's Hospital), who reports her jaundice to have appeared after taking a six grain calomel pill. These statements are in accordance with the experiments I have detailed,—the animals to whom I gave mercury had jaundice of the liver.

One very important effect to be noticed of the administration of mercury on the liver is, that it certainly produces very great congestion of the organ; this is an argument for rather forbearing the use of this remedy in inflammation of the substance of the liver, a practice which would otherwise be recommended by our analogical experience.—*Med.-Chirurgical Transactions*, 1852, *p.* 258.

56.—*On the Treatment of Dysentery.* By Dr. Cameron, Surgeon 37th Regiment.—Dysentery is generally seen as colonitis in Ceylon, and very rarely attended with that hepatic complication so much talked of elsewhere. The treatment pursued has been local depletion by leeches to the abdomen and anus, the internal use of Dover's powder and ipecacuanha, in doses of three grains each every third hour during the early stage, and afterwards combinations of opium with kino, chalk, tannin, acetate of lead, &c., according to circumstances.

In all severe cases, I have for many years past conjoined quinine in moderate doses

with the other remedies, giving to the extent of twelve or sixteen grains in the twenty-four hours, and, I am persuaded, with the best results as regards the patient's strength and the prevention of sloughing of the mucous membrane. I attach much importance, also, to the support of the patient from the commencement. Sick men often die of *starvation* as much as anything else. I generally give a cup of arrow-root twice a day for the first three days, and after that continue it, with chicken broth, for dinner and drink. Opiate injections are commonly used. I have occasionally derived benefit from strong solutions of nitrate of silver thrown into the colon; but with the ordinary apparatus it is nearly impossible to use the remedy effectively, owing to decomposition.—*Med. Times and Gazette, Oct.* 8, 1853, *p.* 366.

DISEASES OF THE URINARY ORGANS.

57.—ON DISEASES OF THE KIDNEY.

By Dr. George Johnson.

[Dr. Johnson correctly remarks, how very frequently acute renal diseases, with dropsy and albuminous urine, are preceded by chills upon the surface, produced often by working or standing in wet clothes. The same in cases occurring after scarlatina: hence it is, that the chief means of preventing consequences ensuing after scarlet fever, are protection from cold until the period of desquamation has passed by.]

A consideration of the circumstances under which these attacks of acute renal disease occur, and of the appearances observable in the urine and in the kidneys, warrants the inference, that the renal changes are the result of an effort to eliminate some abnormal products, which have been conveyed to the kidneys by the blood. In cases of scarlatina, for instance, it is probable that exposure to cold has the effect of checking the process by which the fever-poison, or ferment, or the product of fermentation, is eliminated from the skin, and that the morbid materials are then transferred to the kidney, in accordance with the well-known tendency to vicarious action of the skin and kidneys. An instructive illustration of this principle is afforded by the fact of several medicines, such as, for instance, the acetate or citrate of ammonia, acting either as diaphoretics or diuretics, according as the tendency is imparted to them by the skin being kept warm, or the contrary. These facts may assist our comprehension of what probably happens when a patient is exposed to cold too early after the onset of scarlatina. The work of elimination is then transferred from the skin to the kidney; and, as a result of this, there is, in some instances, a free desquamation of the renal epithelium, analogous, as it appears, to the cutaneous desquamation which follows the eruption of scarlatina. That the cells of renal epithelium which are thus freely shed do actually carry with them a portion of the abnormal material with which the blood is infected, is, I think, as nearly certain as any position which is chiefly based upon probable evidence can be. In the urine of a girl named Robinson, who died in King's College Hospital in the year 1847, there were numerous cells of renal epithelium completely filled with crystals of oxalate of lime, while other cells contained oil; the urine was highly albuminous, and had in it many tube-casts. In this case, it is evident that the renal cells were conveying away abnormal products. The hypothesis which assumes, that the free shedding of epithelium from the uriniferous tubes is a means of eliminating morbid materials, is quite consistent with all the facts of the case, which cannot, I think, be said of any other explanation of the phenomena which has been suggested.

The process of renal desquamation, although primarily and essentially beneficial in its tendency, is not unproductive of mischief; for the secreting structures of the kidney being arranged in the form of minute tubes, which are of great length, and very tortuous, it is evident that the epithelial cells which are thrown off cannot escape with that rapidity with which the epidermic scales are cast off from the cutaneous surface; the consequence is, that the cells, and the fibrinous materials which accompany them, frequently fill, distend, and obstruct the tubes, and thus greatly impede, if they do not entirely arrest, the secretory process. And thus it happens, that many tubes being rendered inefficient, either for the further elimination of the

morbid products, or for the discharge of their normal excretory functions, the urine is greatly diminished in quantity, and the patient may die from some of the secondary consequences of an accumulation of poisonous excrement in the blood.

To illustrate these phenomena by an analogy, I would remark, that the relief from urgent symptoms which is afforded by the appearance of the small-pox eruption, is evidence, as we suppose, that some mysterious poison has been thrown from the blood into the skin. The non-appearance of the eruption is often associated with the most rapidly fatal symptoms; and, on the other hand, the patient may be killed by the very abundance of that eruptive process which nature intended, and which was, indeed, essential for his preservation.

In like manner, it is a matter of almost daily observation, that those cases of acute dropsy with albuminous urine are, in general, most certainly and easily cured, in which there is a copious renal desquamation; while the most rapidly fatal case which I have met with, was one in which there was neither desquamation nor fibrinous effusion into the kidney-tubes.

It must be remembered, that, as the eruption of small-pox may be scanty, in consequence of the blood being infected, as we suppose, by only a small amount of the specific poison, or in consequence of the blood being changed by the same poison in a less degree than ordinary, so the degree of renal desquamation may be slight from an analogous cause. In both cases, we draw this conclusion from the observation of similar facts—namely, the comparative mildness of the general symptoms. These doctrines are obviously, in a certain degree, hypothetical; but any one who rejects them merely because they are hypothetical, and not because they are inconsistent with established facts, can scarcely have reflected as he ought to do upon the fact, that it is upon probable and not upon demonstrative evidence that we are often bound to act—if we will act at all—not merely in the practice of medicine, but in the most important concerns of our daily life.

With regard to the duration of an acute renal attack, it is to be observed, that very much depends on the nature of the cause. As an illustration of this, I may mention, that the renal disease which occurs in connexion with cholera, often terminates within two or three days from its commencement; while the duration of that which results from scarlatina is rarely less than the same number of weeks. Yet, in both instances, the local phenomena are precisely similar. The prognosis, therefore, is not to be based exclusively upon the condition of the urine.

In thus briefly passing in review the leading facts in the pathological history of that form of acute renal disease which is always associated with albuminous urine, and in most cases with dropsy, my purpose has been to indicate the primary object of treatment, which is, *to guard against exposure to cold.* As exposure to cold, whether acting alone, or in conjunction with other influences, is among the most frequent *exciting causes* of inflammation of the kidney, so there is nothing which has a greater tendency to perpetuate the disease, and to render it incurable. Attention to this point of treatment is as indispensable for the patient's welfare as a steady position for a broken bone, or rest for an inflamed knee-joint. I am confident that the neglect of this precaution has been the means of converting more acute and curable attacks of renal disease into a chronic and incurable malady than all other causes combined. Within the last few months several instances have come to my knowledge, in which the life of a patient suffering from acute renal dropsy has been sacrificed, by his being permitted to go out, day after day, to visit his medical attendant.

In a cold season, confinement to the bed is absolutely necessary for the patient's well-being and safety; and, even in warm weather, it appears to favour and hasten the recovery. Rest in the horizontal posture tends to quiet and equalize the circulation; and the uniform warm temperature of the bed favours the action of the skin, and prevents the risk of a check to perspiration. The result is, that the dropsy quickly subsides, and the urine becomes more copious and less albuminous.

The diet should be scanty; for the patient has little desire for food, and the digestive powers are much impaired. The passage into the blood of imperfectly-digested food will surely irritate the kidneys; the urine is often more albuminous after meals, and I once saw a return of hæmaturia follow a meal of potatoes. Alcoholic drinks should be prohibited, unless required for some special purpose.

Having secured the two primary objects of treatmeut—a moderate uniform temperature, and a scanty diet—we must be guided by the nature and urgency of the

with the other remedies, giving to the extent of twelve or sixteen grains in the twenty-four hours, and, I am persuaded, with the best results as regards the patient's strength and the prevention of sloughing of the mucous membrane. I attach much importance, also, to the support of the patient from the commencement. Sick men often die of *starvation* as much as anything else. I generally give a cup of arrow-root twice a day for the first three days, and after that continue it, with chicken broth, for dinner and drink. Opiate injections are commonly used. I have occasionally derived benefit from strong solutions of nitrate of silver thrown into the colon; but with the ordinary apparatus it is nearly impossible to use the remedy effectively, owing to decomposition.—*Med. Times and Gazette, Oct.* 8, 1853, *p.* 366.

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By Dr. George Johnson.

[Dr. Johnson correctly remarks, how very frequently acute renal diseases, with dropsy and albuminous urine, are preceded by chills upon the surface, produced often by working or standing in wet clothes. The same in cases occurring after scarlatina: hence it is, that the chief means of preventing consequences ensuing after scarlet fever, are protection from cold until the period of desquamation has passed by.]

A consideration of the circumstances under which these attacks of acute renal disease occur, and of the appearances observable in the urine and in the kidneys, warrants the inference, that the renal changes are the result of an effort to eliminate some abnormal products, which have been conveyed to the kidneys by the blood. In cases of scarlatina, for instance, it is probable that exposure to cold has the effect of checking the process by which the fever-poison, or ferment, or the product of fermentation, is eliminated from the skin, and that the morbid materials are then transferred to the kidney, in accordance with the well-known tendency to vicarious action of the skin and kidneys. An instructive illustration of this principle is afforded by the fact of several medicines, such as, for instance, the acetate or citrate of ammonia, acting either as diaphoretics or diuretics, according as the tendency is imparted to them by the skin being kept warm, or the contrary. These facts may assist our comprehension of what probably happens when a patient is exposed to cold too early after the onset of scarlatina. The work of elimination is then transferred from the skin to the kidney; and, as a result of this, there is, in some instances, a free desquamation of the renal epithelium, analogous, as it appears, to the cutaneous desquamation which follows the eruption of scarlatina. That the cells of renal epithelium which are thus freely shed do actually carry with them a portion of the abnormal material with which the blood is infected, is, I think, as nearly certain as any position which is chiefly based upon probable evidence can be. In the urine of a girl named Robinson, who died in King's College Hospital in the year 1847, there were numerous cells of renal epithelium completely filled with crystals of oxalate of lime, while other cells contained oil; the urine was highly albuminous, and had in it many tube-casts. In this case, it is evident that the renal cells were conveying away abnormal products. The hypothesis which assumes, that the free shedding of epithelium from the uriniferous tubes is a means of eliminating morbid materials, is quite consistent with all the facts of the case, which cannot, I think, be said of any other explanation of the phenomena which has been suggested.

The process of renal desquamation, although primarily and essentially beneficial in its tendency, is not unproductive of mischief; for the secreting structures of the kidney being arranged in the form of minute tubes, which are of great length, and very tortuous, it is evident that the epithelial cells which are thrown off cannot escape with that rapidity with which the epidermic scales are cast off from the cutaneous surface; the consequence is, that the cells, and the fibrinous materials which accompany them, frequently fill, distend, and obstruct the tubes, and thus greatly impede, if they do not entirely arrest, the secretory process. And thus it happens, that many tubes being rendered inefficient, either for the further elimination of the

morbid products, or for the discharge of their normal excretory functions, the urine is greatly diminished in quantity, and the patient may die from some of the secondary consequences of an accumulation of poisonous excrement in the blood.

To illustrate these phenomena by an analogy, I would remark, that the relief from urgent symptoms which is afforded by the appearance of the small-pox eruption, is evidence, as we suppose, that some mysterious poison has been thrown from the blood into the skin. The non-appearance of the eruption is often associated with the most rapidly fatal symptoms; and, on the other hand, the patient may be killed by the very abundance of that eruptive process which nature intended, and which was, indeed, essential for his preservation.

In like manner, it is a matter of almost daily observation, that those cases of acute dropsy with albuminous urine are, in general, most certainly and easily cured, in which there is a copious renal desquamation; while the most rapidly fatal case which I have met with, was one in which there was neither desquamation nor fibrinous effusion into the kidney-tubes.

It must be remembered, that, as the eruption of small-pox may be scanty, in consequence of the blood being infected, as we suppose, by only a small amount of the specific poison, or in consequence of the blood being changed by the same poison in a less degree than ordinary, so the degree of renal desquamation may be slight from an analogous cause. In both cases, we draw this conclusion from the observation of similar facts—namely, the comparative mildness of the general symptoms. These doctrines are obviously, in a certain degree, hypothetical; but any one who rejects them merely because they are hypothetical, and not because they are inconsistent with established facts, can scarcely have reflected as he ought to do upon the fact, that it is upon probable and not upon demonstrative evidence that we are often bound to act—if we will act at all—not merely in the practice of medicine, but in the most important concerns of our daily life.

With regard to the duration of an acute renal attack, it is to be observed, that very much depends on the nature of the cause. As an illustration of this, I may mention, that the renal disease which occurs in connexion with cholera, often terminates within two or three days from its commencement; while the duration of that which results from scarlatina is rarely less than the same number of weeks. Yet, in both instances, the local phenomena are precisely similar. The prognosis, therefore, is not to be based exclusively upon the condition of the urine.

In thus briefly passing in review the leading facts in the pathological history of that form of acute renal disease which is always associated with albuminous urine, and in most cases with dropsy, my purpose has been to indicate the primary object of treatment, which is, *to guard against exposure to cold.* As exposure to cold, whether acting alone, or in conjunction with other influences, is among the most frequent *exciting causes* of inflammation of the kidney, so there is nothing which has a greater tendency to perpetuate the disease, and to render it incurable. Attention to this point of treatment is as indispensable for the patient's welfare as a steady position for a broken bone, or rest for an inflamed knee-joint. I am confident that the neglect of this precaution has been the means of converting more acute and curable attacks of renal disease into a chronic and incurable malady than all other causes combined. Within the last few months several instances have come to my knowledge, in which the life of a patient suffering from acute renal dropsy has been sacrificed, by his being permitted to go out, day after day, to visit his medical attendant.

In a cold season, confinement to the bed is absolutely necessary for the patient's well-being and safety; and, even in warm weather, it appears to favour and hasten the recovery. Rest in the horizontal posture tends to quiet and equalize the circulation; and the uniform warm temperature of the bed favours the action of the skin, and prevents the risk of a check to perspiration. The result is, that the dropsy quickly subsides, and the urine becomes more copious and less albuminous.

The diet should be scanty; for the patient has little desire for food, and the digestive powers are much impaired. The passage into the blood of imperfectly-digested food will surely irritate the kidneys; the urine is often more albuminous after meals, and I once saw a return of hæmaturia follow a meal of potatoes. Alcoholic drinks should be prohibited, unless required for some special purpose.

Having secured the two primary objects of treatmeut—a moderate uniform tem perature, and a scanty diet—we must be guided by the nature and urgency of the

symptoms in the choice of additional remedies. In every case it is desirable to promote the action of the skin and bowels; the first by diaphoretic medicines and the hot air bath, and the latter by saline aperients, or by the compound jalap powder. The free action of these great excretory surfaces is a very efficient means by which to lessen the injurious over-work of the kidneys. It scarcely need be said, that however scanty may be the urine, no stimulating diuretic is to be given; indeed, the more scanty the secretion, the more injurious would be the effect of any irritating drug. This is so obvious, from a consideration of the pathology of the disease, as to require not a word of comment or explanation. During the convalescence the urine is usually twice as abundant as in health, in consequence, probably, of the naturally diuretic influence of the urea and other urinary products which, having accumulated in the blood during the acute stage of the disease, find a free outlet when that stage is passed. A practitioner who has been perseveringly giving diuretics, and who is ignorant of this pathological fact, will be likely to attribute to the influence of his drugs this abundant flow of urine, which is, in fact, only a natural and a spontaneous diuresis. It will be understood, that, in deprecating the use of diuretics, I am speaking only with reference to cases of *acute* renal disease. When the disease has become chronic, and when an excessive dropsical accumulation constitutes the most distressing and dangerous symptom which other means have failed to remove, "we must incur the risk of one possible and contingent evil for the chance of obtaining what, if obtained, is a certain and positive benefit; we must endeavour to remove the dropsical accumulation by means of diuretics, whether these accelerate the progress of the disease in the kidney or not." In such circumstances the hope of entirely removing the renal disease has been abandoned, and the chief object of treatment is to relieve the most urgent symptoms, and to prolong life to the utmost.

[After the acute stage of nephritis has passed, Dr. Johnson recommends that the patient, especially in winter, be kept in-doors, until no albumen can be detected in the urine. If he rebels, he will very probably bring on a relapse, of which he should be warned. If, after every precaution has been taken, and the period of confinement prolonged, still the urine contains albumen, though natural in other respects, gallic acid may be given; and if after this the quantity of albumen continues, Dr. Johnson advises that he should be removed to the sea-side, and allowed to take a daily airing. If the malady still persists, and assumes a chronic form, the patient must be urged to take a sea voyage as early as possible. As to the treatment of cerebral symptoms, consequent on acute inflammation of the kidneys, as after scarlatina, or exposure to cold, we must relieve the congested state by cupping over the region of the kidneys, and abstracting a moderate quantity of blood, and by exciting free action in the mucous membrane of the bowels, by means of elaterinm or pulv. jalap. co., with a few grains of calomel sometimes added.]

If we can excite copious discharges from the mucous membrane of the bowels, we shall by that means eliminate some of the excreta which are poisoning the blood, for urea has been detected in the watery stools produced by elaterium. There is not much to be hoped from cupping over the kidneys, but dry cupping can certainly do no harm; and, if the patient's appearance be not decidedly anæmic, we may venture to abstract a small quantity of blood; but we shall do this with much caution, if we bear in mind Dr. Watson's suggestion,—sanctioned, too, by the high authority of Dr. Todd,—that an impoverished condition of the blood may favour the tendency to coma and the poisonous action of urea. Cold lotions may be applied to the head when the scalp is hot, and blisters when the skin is cool. Since, in any case, it is a more hopeful task to prevent drowsiness from passing into coma, than to bring a patient out of a comatose condition when once he has fallen into it, it is important to keep a watchful eye upon the premonitory symptoms. In some cases, it appears that the most successful mode of keeping them in check is to give a nutritious but unstimulating diet, with moderate doses of steel, and, at the same time, to keep up a free action of the bowels.

[Can the kidney perfectly recover from an acute inflammatory attack? Dr. Johnson answers, yes, if the case has come early under treatment, and yielded to it in moderate time. No harm will result, except the spoiling of a few of the tubes and wasting of the parts, unless the disease has been so long prolonged as to de-

stroy the epithelial lining of the tubes and render them liable to be converted into cysts.]—*Med. Times and Gazette, July* 16, 1853, *p.* 53.

58.—INFLAMMATION OF SEROUS MEMBRANES IN CHRONIC RENAL DISEASE.

By Drs. George Burrows and W. Senhouse Kirkes.

[Examinations after death prove the frequency of the complication of inflammatory affections of the serous membranes with chronic renal disease. Generally in such cases, one or more of these structures present evidence of having been formerly or recently inflamed.]

The liability of the serous membranes to become secondarily affected in the course of chronic disease of the kidney, was recognised and pointed out by the eminent physician to whom we are indebted for so much that we now know on the subject of renal disease. In the first volume of his Reports, Dr. Bright says: "When the secretion of these organs [the kidneys] is greatly deranged, the serous membranes seem always ready to become the seat of inflammatory action." And again, at page 18, he speaks of the "disposition which exists in this disease [renal dropsy] to severe inflammatory affection of different structures, but more particularly of the serous membranes;" and such secondary serous affections he elsewhere speaks of as among the chief sources of danger in chronic renal disease. The truth of these statements has been amply confirmed by later observers, and the liability of the serous membranes to become inflamed in the course of Bright's disease may therefore be regarded as a fact well established.

Although it may be considered as a settled truth, that the serous membranes, as also other tissues, are prone to inflammation in the course of Bright's disease of the kidney, yet there are certain peculiarities in the serous inflammation which have either not yet attracted particular attention, or have not been sufficiently dwelt upon; and as these peculiarities seem calculated to throw some light on the cause of the inflammatory process, and so to be beneficial in treatment, an inquiry into them here may not be out of place. In the first place, then, it may be observed, that in every stage of chronic renal disease there seems to exist a tendency to the effusion of an excess of serum into the serous cavities, as well as into the loose cellular tissue of the body. The effused fluid, in this disease, differs in its nature, as well as in the cause producing it, from that exuded in cardiac dropsy. In the latter, it results from mechanical distension of the capillaries; in the former, from an unhealthy state of the blood, especially of its serous parts. In cardiac dropsy, the exuded serum is usually clear, and of a colour varying from pale straw to deep yellow; in renal dropsy it is almost always slightly turbid or opaline, sometimes whey-like and milky, and usually of a pale tint, almost colourless. Moreover, the dropsical fluid in cardiac disease is free from urea; while that in renal disease has been found to contain urea in appreciable, often considerable quantities. Simon met with it in the fluid from dropsical legs in a case of Bright's disease; and Marchand found "an extraordinarily large amount in the fluid removed by tapping from a woman with ascites." Simon, therefore, is probably correct when, speaking of dropsical fluids in general, he says: "If the kidneys are affected, urea is generally present" in them. For, since it is well known that the blood, especially the serous part of it, is charged with urea in Bright's disease, it may be readily believed, that in transuding the walls of the blood-vessels, the serum of the blood carries with it some of the urea, as well as other materials which it holds in solution, and that this ingredient may be detected in the dropsical fluid accumulated in the serous cavities, or exuded into the cellular tissue of the body.

To the presence of this excrementitious material in the serum exuded from the blood may probably be ascribed the inflammation which is apt to ensue in the serous cavities in renal disease. Highly delicate and sensitive, as we know the serous membranes to be, we can scarcely be surprised that they should be irritated and excited to a kind of inflammatory process by the substitution of a fluid charged with urea, for the simple unstimulating secretion by which their interior is naturally moistened. And this is the more likely to be the case, since the fluid exuded into

the serous cavities remains pent up therein, and cannot, as in the case of exudations from the mucous surfaces, be at once got rid of, and the liability to mischief from prolonged contact with the membrane be thus obviated. Wherever exuded, the serous fluid, impregnated with urea, will probably act as a local irritant to the part with which it comes in contact; but, from the mucous surface, it is swept away as fast as poured out; while, in the serous cavities, and the cellular tissue of the integuments, or of organs, it necessarily remains until re-absorbed, and may readily be supposed to induce the inflammation which the serous membranes, the cutaneous cellular tissue, and the substance of cellular organs such as the lungs, are apt to undergo.

The several peculiarities observed in the serous inflammations ensuing in the course of renal disease, may, probably, in a great measure, have their explanation in the view here taken of the cause of these secondary inflammations. The inflammatory process, as it occurs in this disease, differs in several respects from that arising spontaneously, or excited by any other cause than renal disease. In its mode of onset it is usually insidious, commencing and progressing with scarcely any of the general or local signs of inflammation, no pain, and no fever, and, therefore, often not discovered till after death, or detected during life by a mere accidental auscultation. It commences, too, very frequently, in one or more serous membranes simultaneously, and quite independent of any obvious exciting cause, such as exposure to cold, and, therefore, scarcely explicable on any other supposition than that of a contaminated condition of the blood. In duration it is usually protracted far beyond the ordinary term of existence of common inflammation.

The products of the inflammatory process are likewise different from those in ordinary inflammation. Instead of meeting, in fatal cases, with the evidence of acute inflammation, as afforded by vivid redness of the surface, and layers of firm, fibrinous lymph intermingled with pus, it is usual to find but little vascularity of the affected membrane, while the lymph is of a soft, curdy, flaky kind, floating in a pale milky fluid, and rarely deposited in tough laminated strata on the surface. Everything, in fact, tends to show that the inflammatory process is of a low form, and unattended by the characters of ordinary active inflammation. In part this peculiarity may be due to the state of general debility and anæmia which the renal disease almost invariably induces; but it is probably also in great measure dependent on the cause which has given rise to the inflammation, namely, according to the view just stated, an unhealthy and irritating quality of the fluid exuded into the serous cavities, which fluid, like the serum of the blood, is more or less charged with the elements of the impeded urinary excretion. The fluid in the serous cavities being at all times, in renal disease, in an unhealthy condition, probably acts as a permanently local irritant of a more or less active kind, according to the amount of urea it contains. Hence may arise the peculiar dull, opaque, milky appearance of the various serous membranes, and the pale, slightly turbid, or flaky character of the fluid within them, met with so very frequently in fatal cases of renal disease, whether of the acute inflammatory kind, as after scarlet fever, or of the more advanced and degenerate form. When the serous fluid contains a considerable quantity of urea, in consequence either of rapidly-ensuing structural changes in the kidney, or of any sudden arrest of dropsy into the cellular tissue, or a catarrhal discharge from a mucous surface which had hitherto served in some measure to rid the blood of part of the excrementitious material accumulating within it, then the additional irritation thus produced lights up a more active inflammation in one or several of the serous membranes, and in this way may bring the disease to a fatal termination.

The several peculiarities just mentioned as belonging to the serous inflammations in renal disease are exhibited in the following few cases, which are of quite an ordinary kind. The following case, which is an example of inflammatory dropsy, probably consequent on the scarlet-fever poison, illustrates, among other points, the statement made above concerning the nature of the fluid usually found in the serous cavities in fatal cases of renal disease.

Case. Jane Robinson, aged 7, admitted into Mary ward, October 25, 1849, under Dr. Roupell, affected with extensive general anasarca. The surface of the body had the peculiar, pale, waxy appearance so common in acute renal dropsy, especially in children. She had a dry, wheezing cough, and a slight difficulty of breathing, explained by some mixed crepitations diffused through the lower half of each lung behind; but she complained of no pain; her aspect was bright and cheerful; tongue

nearly clean, appetite good, and the bowels freely open; her urine, however, was scanty, pale, turbid, and highly albuminous; examined microscopically, it exhibited (*a*), a few blood corpuscles (*b*), a few fibrinous casts of urinary tubules, containing much granular material, with traces of corpuscles and nuclei (*c*), several free nuclei (*d*), large irregular masses of granular matter, and (*e*), numerous tesselated epithelium scales, separated and grouped—no oil. The child had been ill for about seven weeks, its ailment commencing with slight feverishness, unaccompanied by either rash or sore throat, but followed, in a week, with desquamation of the cuticle of the hands; the attack was not sufficiently severe to prevent its playing about; but in about three weeks its abdomen rather suddenly began to swell, and the dropsy then speedily extended to other parts. A week before admission, cough came on, accompanied with difficulty of breathing, which, at times, became very urgent. In a day or two after admission, with increase in the cough and difficulty of breathing, a distinct, though soft and churning pericardial rubbing sound was detected in the cardiac region, and it continued, with increased cardiac dulness on percussion, to within two days of the child's death, when it gradually became indistinct. During the eight days it was under observation in the hospital, the child's cough and difficulty of breathing continued, and the latter gradually became more distressing, in spite of the various measures applied for its relief. The last twenty-four hours of its life were spent in a state of great distress from the urgent dyspnœa.

On examination after death, the kidneys were found larger than natural; the cortex extremely pale, though variegated with a few star-like blood-vessels; the medullary portion of a deep red colour. Through the capsule, but more distinctly on its removal, there were observed on the surface of each kidney, numerous closely-set, minute, pale yellow specks, like so many fine grains of sand. On section, the cortex appeared filled with the same yellowish-white material of which these specks consisted; the cut surface had the peculiar dull, yellowish-white, streaky appearance not inaptly compared to the section of a parsnip. Examined beneath the microscope, portions of the cortical structure exhibited the urinary tubules crowded and distended with granular matter and epithelial cells; the Malpighian capsules were similarly distended; while, over the field, were numerous large circular masses of granular material, which appeared to represent the minute grains seen with the naked eye on the cortex, and probably consisted of separated Malpighian bodies, with granular matter enclosed in the capsule. The pericardium contained about ʒ ss. of turbid, whey-like fluid; while a few firm granules adhered to the root of the great vessels. In each pleural cavity were about six ounces of similar pale, turbid fluid; and about a pint of the same existed in the peritoneal cavity. There was no undue vascularity or recent deposit of lymph in any of the serous membranes. The heart was much enlarged, especially the left ventricle; the valves were all healthy. The lungs were pale, solid, and heavy, from extreme œdema of the pulmonary tissue, though crepitant at all parts. Nothing worthy of note in relation to the case was observed in any of the other organs.

Here, in a recent attack of acute renal dropsy, the fluid in all the serous sacs presented the pale, milky character mentioned as being so generally observed in renal disease, even independent of any decided evidence of inflammatory action. The fluid, differing as it does from that transuded in cardiac dropsy, is evidently in an unhealthy condition, and may, in consequence, be supposed likely in time to induce irritation and inflammation of the delicate structure with which it remains in contact. Besides the illustration which this case seems to furnish in regard to the point just mentioned, it affords important information respecting the pericardial friction-sound perceived so distinctly during several days in the child's life-time; showing that this sign, when occurring in dropsy after scarlet fever, does not invariably indicate an active inflammatory process, to be combated by antiphlogistic measures; for there was no increased vascularity of the pericardial surface, or product of inflammation within its cavity, found after death. The cause of the friction-sound in this case must remain matter of speculation; possibly it depended on some dryness and roughness of the surface existing previous to the exudation of the serum found after death; for as yet we have no evidence that mere serum in the pericardial cavity can give rise to a perceptible rubbing sound.—*Med. Times and Gaz., June* 25, 1853, p. 643.

59.—*On Diabetes Mellitus.* By M. SCHUTZENBERGER, Strasburg.—[From a case related by this gentleman, this disease may, by appropriate treatment, not only be arrested, but the patient restored to comparative health. The author concludes by the following rules and deductions:]

1. Glucosuria is not an incurable disease, and although the tendency to relapse is certain, it is possible, by perseverance, not only to remove the sugar from the urine, but also to bring the patients so far as to bear a varied diet, in which feculent substances may enter without causing a relapse.

2. The amount of glucose excreted by patients is sensibly proportionate to the quantity of feculent matter added to the food, and it is possible to discover errors of diet by the increase of the glucose in the urine. The quantity of urine is equal to that of the fluid ingested, and the latter also proportionate to the amount of the feculent substances taken into the economy.

3. Diet forms the principal part of the treatment of glucosuria; the food ought chiefly to consist of milk, fatty substances, butter, oil, eggs, and meat.

4. The entire banishment of feculents seems necessary to make the sugar disappear completely.

5. Small quantities of bread, viz., about three ounces per diem, are generally well borne, and do not excite a fresh secretion of sugar when once it has disappeared.

6. The powers of assimilation increase gradually, and it is possible, by means of chemical analysis, to ascertain the extent to which the peculiar diet and medicine ought to be carried.

7. The effect of diet is powerfully assisted by the use of certain therapeutic agents, and especially by opium, in increasing doses, and by alkaline drinks. In this affection the tolerance of the opium is very great.

8. It is certain that the glucose is formed in the alimentary canal, and that the absorbents generally take it up, so that solid motions come to contain no sugar.

9. Purgatives may cause a diminution of glucose in the urine, as more or less of the sugar which would have passed into the urine is carried away by the liquid stools.

The author does not enter into any theoretical discussion touching glucosuria, as his object was merely to call attention to a series of interesting and instructive facts.—*Lancet, Aug.* 6, 1853, *p.* 120.

60.—CASE OF DIABETES.

[This case was related by DR. HENRY KENNEDY, at a meeting of the College of Physicians in Ireland. It is in the words of the patient himself.]

"I first consulted Dr. —— in London in 1851. He immediately forbad me sugar, vinegar, bread, cereal food, or anything containing sugar. He ordered me half-ounce doses of liquor potassæ three times a day, and which, in six weeks, caused an immense deposit of the sulphates in my urine,—its specific gravity being often as high as 1040. At this period I lost flesh at the rate of 7lb. a fortnight, and was otherwise much reduced. I left off the medicine, found myself the better of having taken it, and shortly after became stationary in weight,—about sixteen stone. My diet at this time was very tiresome; and in August, 1851, I again saw Dr. ——, to try if he would alter it. He allowed me maccaroni, and a vegetable product called manna croup. I used these, and in addition ate bread very moderately, and also potatoes. When March, 1852, arrived, I found myself going back again; the urine heavier, and when tested with liquor potassæ fully as dark as the strongest coffee. I had been warned about the use of particular kinds of food, and since then have never tasted them; and my urine is now about 1022, and contains but a trace of sugar. My attention was first called to my own case by anomalous pains, which I could scarcely describe, and which were at first made light of. I had also a total loss of venereal appetite. The singular part of my case is, that I have never made an unusual quantity of urine; that it has its proper smell; and that I have not suffered from thirst or a dry skin; but the moment I eat cereal food the urine increases in specific gravity. I ought to state that the warm bath is part of the treatment, and this I use daily. A little brandy is the only good thing I take. I have never yet met any medical man who

spoke of more than arresting a disease like mine: cures are said to have been performed, but there are none of a satisfactory kind."

Such was the patient's account of his own case. Dr Kennedy then directed attention to the special points in it: 1st. The enormous doses of the liquor potassæ; 2nd. The absence of thirst; 3rd. The small quantity of urine passed; and 4th. The active state of the skin. He also took occasion to state that there are numerous authentic cases of cure on record, and referred particularly to the seventh volume of the Edinburgh Medical and Surgical Journal in proof of this. He also alluded to the recent important discoveries of Bernard, who had clearly shown that sugar could be elaborated by the system itself; and hence, that the idea of cutting off the supply of articles containing sugar must in future be much modified. In conclusion, it was suggested that an entire change of climate might suit cases of this intractable disease.—*Dublin Quarterly Journal, August*, 1853, *p.* 212.

61.—ON GOUT AS IT AFFECTS THE BLADDER.

By Dr. Robert B. Todd, F.R.S., &c.

[Preceding his observations by mentioning some cases in which pus is found in the bladder, Dr. Todd goes on to consider the subject of gout in the bladder. He says:]

Gout appears to me to manifest itself in the bladder in four different ways.

1st. It manifests itself as a distinct and very obvious inflammatory affection; so that I imagine, in these cases, the mucous membrane of the bladder would be found red and inflamed, presenting, indeed, the ordinary appearance of a mucous membrane in a state of inflammation. This condition must, however, be distinguished from inflammation of the bladder, occurring from other causes, and unconnected with any specific inflammation. Gouty inflammation of the bladder is an analogous affection to gouty inflammation of the lungs, gouty bronchitis, or gouty pneumonia and gouty inflammation of the stomach. In cases of this kind there is a great tendency to the secretion of pus by the mucous membrane of the bladder. If there be any difficulty in the free evacuation of the pus, the urine becomes alkaline, from the retention of a small quantity of the secretion, and the subsequent decomposition of the urea; the highly alkaline urine, in its turn, keeps up the irritability of the bladder, and promotes the secretion of more pus. In this way, either a weak or paralytic state of bladder, or an enlarged prostate, or a stricture in the urethra may stand in the way of the complete restoration of this organ to its healthy functions.

2ndly. Gouty inflammation attacks the bladder in a different manner to that last described, so as to produce incontinence of urine. A gouty man becomes troubled with incontinence of urine, and we find that this incontinence depends upon a highly irritable state of the mucous membrane of the bladder, and a consequent inability of that organ to retain the urine, and not upon a paralytic state of the sphincter vesicæ muscle. In this form, the sensibility of the mucous membrane is very much exalted, and the bladder becomes intolerant of the presence of the smallest quantity of urine, so that the evacuation of its contents is constantly taking place at short intervals. The prominent symptom then, in such cases, is frequent micturition of small quantities of urine, the urine being pale, acid, devoid of mucus or pus; sometimes, it may be, albuminous, owing to the existence of gouty disease of the kidneys.

It is difficult to define the exact pathological condition of the mucous membrane of the bladder in this affection. It is an irritable rather than an inflammatory state,—a condition in which the sensibility of the mucous membrane of the bladder is greatly exalted, owing to the influence of the gouty poison, which seems capable of irritating the bladder as cantharidine does. The cases in which it is apt to occur are generally in elderly persons, whose systems seem thoroughly imbued with gout, and in whom deposits exist in the joints, or the tendinous sheaths, or in the arteries. It occurs in old persons, and often accompanies enlargement of the prostate gland. Sir Benjamin Brodie describes cases which, I suspect, are of this nature, the primary cause of the symptoms being gout. He says, "An elderly man complains of frequent attacks of giddiness. Sometimes, in walking, his head turns round, so that he is in danger of falling; and this symptom probably arises from altered structure of the

arteries of the brain, causing an imperfect state of the cerebral circulation. This state of things is sometimes attended with an irritable condition of the bladder, and, although the urine is of a healthy quality, and the bladder itself is free from disease, the patient is tormented with a constant micturition, voiding his urine without pain, but at short intervals, and in small quantity."

3rdly. A third class of cases exhibits a condition opposite to that which I have just described, in which, instead of the patient's being unable to retain even a small quantity of urine in his bladder, he is suddenly or rapidly affected with an inability to pass water, and the bladder becomes distended in consequence, causing great pain and suffering. The essential difference between these two conditions consists in this, that in the former case the mucous membrane is rendered highly irritable by the gouty poison, and kept so by some irritating quality of the urine, but in the latter case the muscular coat is the seat of the affection. There is ample evidence to shew, that muscles may be attacked by the rheumatic or by the gouty poison. Thus, in subjects of gouty diathesis, it is not uncommon to meet with sudden and severe affections of external muscles, accompanied with constitutional disturbance similar to that of acute gout. I am just now attending a nobleman in whom very decided constitutional disturbance, accompanied by distressing intermission of the heart's action, preceded for some time the sudden appearance of a very painful inflammatory affection of the same portion of the gastrocnemius muscle on each side, which came on in the sudden way in which gout is apt to do. Lumbago is an instance of gouty affection of muscles. The intercostal muscles are often similarly attacked, giving rise to a most painful affection, which occasionally ends in pleurisy, or even pleuro-pneumony. Just in the same way gout may attack the muscular fibres of the bladder, stomach or colon; and in the cases of retention of urine such as I am describing, it affects the muscular coat of the bladder so as to paralyse it, in a manner analogous to that in which the active principle of belladonna may affect the muscular fibres of the iris, and cause a dilated, immovable pupil.

I will relate to you a case in illustration of this form of gout in the bladder. A barrister of great eminence in his profession was obliged to return to town from his circuit, where he was largely employed, and, indeed, overworked. He had been seized with severe muscular pains in the thighs and loins, which I regarded as gouty. The patient was of a gouty family, generated lithic acid freely, and had passed a considerable quantity of lithic acid gravel. On a former occasion I had attended him for one of those attacks of sudden affection of the intercostal muscles (gouty pleurodyne, as I would call it), passing on to dry pleurisy. For these reasons, I was justified, I think, in regarding and treating these pains as gouty in their character. After he had been three or four days under treatment for this affection, he found, one morning, on attempting to empty his bladder, that it refused to discharge its contents. A complete paralysis of the bladder had taken place, and evidently not from too great distension, as the patient did not suffer much inconvenience, and the quantity of water which had accumulated was not considerable. Under a soothing treatment, with slight counter-irritation over the region of the bladder, this paralytic state gave way within four-and-twenty hours, but it was several days before the full power and tone of the bladder was restored.

4thly. Gout attacks the bladder, in some cases, as follows (and I take my remarks on this head from a case which actually came under my notice):—A gouty man indulges more freely in the delicacies of the table than he is usually wont to do; perhaps he is guilty of some indiscretion in what he partakes, eating cheese or some other indigestible matter which disagrees with him, and, before he goes to bed, he is suddenly seized with violent pains in the region of the bladder, which in some cases lasts an hour, but in others continues to torment the patient for two or three hours, preventing him from sleeping, and often producing great distress. This condition is usually relieved by free counter-irritation, and the administration of alkalies.

If, then, you find a man labouring under any of the four conditions that I have described, and at the same time you are able to discover from his history symptoms characteristic of a gouty diathesis, and you are convinced of the absence of calculus, you may feel satisfied that the symptoms are dependent upon a gouty inflammation of the bladder, and your treatment will be influenced accordingly. It must, however, be borne in mind, that a stone will cause the development of very similar symptoms, *and it will* therefore be necessary to sound the patient carefully, in order to deter-

mine the presence or absence of stone. The sudden invasion, the existence of the gouty diathesis, and the absence of other causes to account for the symptoms present, mark the peculiar nature of the affection, and concur in making us suppose the disease to be of gouty nature. Being decided as to the diagnosis, what means are we to adopt to relieve the symptoms? The treatment in these cases is obvious and simple. First and most important, then, is free counter-irritation; but you must apply your counter-irritation carefully, and consider what form of counter-irritant will be best suited to the case. Blisters would be improper, because cantharidine, which is the active principle of the blister, is a direct irritant to the mucous membrane of the bladder, and would tend, therefore, rather to increase the distress. Turpentine must not be employed either, because it irritates the kidneys, and the irritation is liable to be propagated to the bladder. Mustard is the most effectual counter-irritant which we can use in these cases, and has not the disadvantage of the former remedies. Strong ammonia may likewise be used as a counter-irritant. Our next consideration must be to relieve pain, which in many cases is a most urgent symptom, and we should endeavour to effect this in the speediest and safest manner possible. If the affection be of the first form, where pus is generated, the best course to pursue is to give an opiate in some way or other. This may be done by the endermic method, by rubbing in a strong opiate liniment over the region of the bladder. Or, what is much better, and more certain in its action, the opium may be given in the form of an enema injected into the rectum. About half a drachm of laudanum, mixed with a small quantity of decoction of starch, of which not more than an ounce and a half, or two ounces, should be employed, may be gently injected into the rectum, and you will find that it acts as a sort of warm poultice, containing opium, to the bladder; and in this way all kinds of irritability of this organ may be relieved. The irritable state of the bladder caused by cantharidine (strangury) is effectually relieved in the same way, and gouty inflammation is benefited in like manner. The action of cantharidine, indeed, forms a pretty good illustration of the manner in which we may suppose the gouty poison to cause the vesical irritability, and they may both be relieved in a similar manner. If the patient is not quite relieved after the administration of the first enema, you need not be afraid to give a second, provided that you are sure he exhibits no peculiar idiosyncrasy with respect to opium. In many cases of this kind you may give opium also with advantage by the mouth, and especially in combination with sudorifics.

With reference to the treatment of all cases of gout, where the disease is apt to attack internal organs, I may give you this practical hint, and I strongly advise you to bear it in mind whenever you may be called upon to treat gout of this nature. It is this, that these cases are of an asthenic character, and do not bear depletory measures; so that if you find a patient labouring under gout of the stomach, or gout affecting the bladder, you must not think of applying leeches, and employing the treatment which would be applicable to other forms of inflammation of these organs; for the abstraction of even so small a quantity of blood as would be taken by the application of a few leeches might do the patient serious mischief, and cause prostration from which he might never rally. On this point Sir Benjamin Brodie has expressed a similar opinion; for he lays it down, that antiphlogistic treatment is inapplicable to that particular form of inflammation of the bladder which is of a gouty origin. With regard to the exhibition of colchicum, I am of opinion, that, in many cases, it is inadmissible, and, in all, it should be given with great caution and circumspection; for this so-called specific is certainly very depressing in its influence, and therefore unsuitable to cases which partake of the asthenic character.

The treatment which, in my experience, has been most beneficial for gout, when it attacks any of the hollow viscera, consists in employing free counter-irritation—keeping up a moderate action of the bowels—paying attention to the functions of the skin, and promoting the action of this great secreting surface by the exhibition of sudorifics. Provided the urine be not alkaline, the administration of alkalies will be found of service, and opium is employed with great advantage for allaying the irritability of the affected organ, which is often productive of great distress to the patient.

As I have before hinted, there is much resemblance between the gouty affections of the bladder and those of the stomach. In the latter organ, gout shows itself by the sudden development of violent pain referred to the stomach. This is often at-

tended with the generation of gas in immense quantities, which distends the organ. Another form is, when the stomach is impatient of the smallest quantity of food, as the bladder is of urine. Incessant vomiting is the characteristic symptom of this form of the complaint. Sometimes these symptoms exist together. In other cases, the muscular coat becomes greatly weakened, and the food is pushed on only very slowly into the bowel. It accumulates in and distends the stomach, which becomes dilated and large, and by reason of the atonic state of the organ remains so. In all the forms of the complaint, but in none more than in this last form, the tendency to the generation of gas is a very prominent feature.—*Med. Times and Gaz., May* 28, 1853, *p.* 539.

SURGERY.

AFFECTIONS OF THE BONES AND JOINTS.

62.—IMPROVED FRACTURE APPARATUS.

By Henry Greenway, Esq., Plymouth.

[Mr. Greenway invented this apparatus while a student at King's College Hospital, and it has been favourably noticed by Mr. Fergusson in his recent work, 'Practical Surgery.' Since that time, however, he has considerably improved the apparatus, which he describes as follows:]

Two tension-rods, *a a*, extend, one on either side, and unite in a curve at one end; on these are slides, *b b**, which support two iron plates, *c c**, so bent as to present two sides at right angles with the floor; the one, *c*, being designed for counter-extension, can be moved to any given point, and there fixed with a check-pin; the other, *c**, by means of which extension is to be made, is mediately attached to a screw, *d*, which pierces, in a central line, the tension-rods at their point of junction. On this screw is a nut, *e*, by whose action against the rods the requisite extension and counter-extension forces are obtained.

Within each bent plate, *c c**, are two pressure pads, one on either side, *f f**, which are moved towards each other by means of a nut and screw, as shown in Fig. 2, and thus made to embrace the limb.

A back-piece, or floor, *g*, on which the limb is to be placed, extends nearly the whole length of the apparatus; it is fixed to the bent plate, *c*, but merely rests on the one *c**, at the opposite end; so that, when extension is made by turning the nut *e*, the bent plate *c** is drawn to a greater distance from the other.

Fig. I.

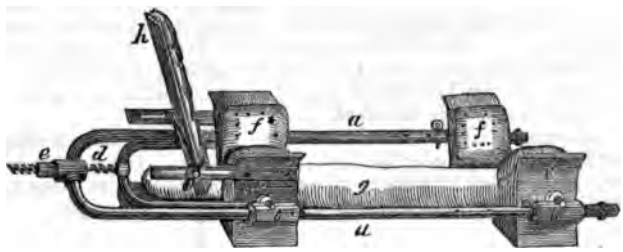


Fig. 1. *a a*, tension-rods; *b b**, one of the slides of each bent plate; *c c**, bent iron plates; *d*, a screw, on which is a nut, *e*, for producing extension; *f f**, one of the pressure-pads of each bent plate; g, back-piece or floor, with pad; *h*, foot piece, with pad.

Connected with the bent plate *c** is a movable foot-piece, *h*, intended only to keep the foot in a proper position, except when the fracture involves the malleoli. The back-piece and foot-piece are to be supplied, each with a separate pad, as shown in the drawing. The apparatus being suspended by four straps from an iron cradle, a swinging motion of the limb is enjoyed by the patient.

Fig. II.

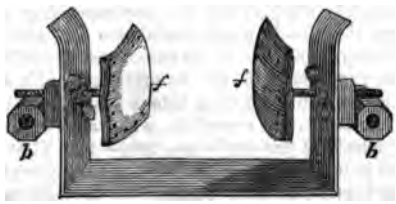


Fig. 2. One of the bent plates (*c*, Fig. 1) removed from the apparatus to show more completely its mechanism, and the action of the pressure-pads. *b b*, the slides which support it on the tension-rods;

ff, the pressure-pads; proceeding outward from each is a screw, which passes through the side of the bent plate, and on this screw (between the pad and the plate) is a nut which, when worked against the plate, forces the pad towards its fellow.

It will thus be seen, that the chief novelty of the apparatus lies in the bent iron plates, with their pressure-pads, which afford the following advantages:—

1. Free circulation throughout the limb, as the popliteal space and the back of the leg are entirely free from pressure.

2. Sloughing at the heel is obviated, as it need only rest slightly on the back-piece, the ankles being almost supported by the pressure-pads.

3. The broken portions of bone, being brought into apposition, are not liable to be thrown out of place by spasmodic action of the muscles.

4. The limb, if the fracture be compound, can be dressed and exposed between the points of extension and counter-extension, without the extended state of the limb being interfered with.

The following is the mode in which a fracture should be treated when this instrument is used:—A doubled piece of sheeting, about four feet in length and nine inches wide, should be thrown across the back-piece in the space between the bent plates, and its ends allowed to hang equally on either side. A flannel roller should then be applied with some degree of firmness around the foot and ankles, and the limb afterwards placed on the back-piece, the distance between the two bent plates having been first regulated according to the length of the limb. The pressure-pads, with any extra padding which may be required, should now be firmly fixed, the one pair, *f*, against the side of the leg, just below the knee; the other pair, *f**, a little above the ankles. An assistant should then make extension by turning the nut, *e*, the surgeon at the same time adjusting the broken portions of bone. That being done, the foot-piece must be placed against the sole of the foot, and be slightly bound to it by a turn or two of a bandage, merely to keep the foot in a natural position; and the ends of the sheeting before mentioned, folded up smoothly, and laid against the sides of the limb, are to be there retained by means of straps, as is usually practised in such accidents.

When a fracture involves the malleoli, the pressure-pads, *f*, having been brought to bear firmly on the limb, the foot-piece with its pad should be firmly attached to the sole of the foot by means of a bandage, and then fixed. Extension should next be made by turning the nut *e;* and the fractured portions of bone being adjusted, the pressure-pads, *f**, may be brought slightly in contact with the ankles. The remaining treatment is as before described.

In some instances, it may be found necessary, if there be much swelling, to dispense with the sheeting, in order to use fomentations, &c.; but if there be little or no swelling, a many-tailed bandage may be applied from the ankles to the knee, after the fracture is adjusted.—*Med. Times and Gaz., July* 23, 1853, *p.* 99.

63.—MR. WINCHESTER'S NEW METHOD OF TREATING FRACTURES, WITH A DESCRIPTION OF A SUITABLE APPARATUS.

[This apparatus is best described in Mr. W.'s own words. He says:]

My invention consists of joints of wood, metal or other suitable material, and of convenient length, which have the power of being fixed at any desired angle. By this arrangement we are enabled to take and retain the exact shape and form of any portion of the body, thereby forming a perfect model of the sound or healthy part, and consequently a complete support for the corresponding injured and diseased part. Its advantages are these:—It gives confidence and certainty to the surgeon in the treatment; and being applicable to all cases, and exceedingly portable, effects a great saving of time (especially to the country surgeon), and suffering to the patient. A full-sized splint can be folded into a space of fifteen inches by three wide, and three deep; can be carried round the waist as a belt, or in the pocket.

My objections to the splints at present in use are,—1st. That they are all, without exception, straight; and it is evident the binding a naturally curved limb to a straight splint must tend to straighten such limb. Again, they keep the patient too long in one position, producing at times considerable mischief, and even sloughing. This also

at times occurs from the injurious pressure arising from the use of screws or other contrivances for the purpose of extension. With regard to *extension*, I would remark, and I believe it will be admitted by most surgeons, that the difficulty arises, not so much in reducing a fracture, as in keeping the parts in apposition after reduction. With extension there must be counter-extension, which requires to be in constant operation; for if withdrawn, the apparatus becomes useless; and moreover, any straining beyond what is natural fatigues the muscles, irritates the patient, and impedes union. I object also to fixing the splint—as is in some instances done—to the bed, or a board provided for that purpose. The splint not moving with the limb, the least sinking in bed or motion of the body must alter the relative position of the ends of the bone, particularly in oblique fractures, which results in shortening.

By the use of my splint all these imperfections are remedied. The exact natural length and shape being preserved, there is no necessity for extension, or chance of displacement. It affords perfect support throughout the entire shaft of the bone; the parts being retained in their original natural position, become quiescent, and nature has only to repair. It is also applicable to the upper extremity—to the spine, and, indeed, to any part of the body requiring artificial support.—*Lancet, Aug.* 20, 1853, *p.* 169.

Fig. I. Fig. II.

Fig. 1 shows the splint.
a a. Pieces of wood, metal, &c.
b. Joints which are fixed at any desired angle.
c. A crutch for the axilla, if necessary; and
d. The foot-piece, both of which can be regulated to any length or angle.
e. Studs for the straps.

Fig. 2 shows the splint applied to the broken side, after being adjusted to the opposite uninjured one. It will be perceived that even should both thigh and leg be broken, the same adjustment does, showing a great superiority over all other splints. It can be lengthened or shortened at pleasure, and a piece removed from any part, should there be a wound, without deranging the adjustment.
f. Ball-and-socket joint for hip.
g. Hinge-joint for knee.

Fig. III.

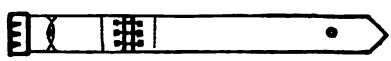


Fig. 3 shows the straps used in the application of the splint. The size of the sound limb is taken when the splint is adjusted by means of the buckle with the lacing fastened. When applied to the injured limb, the original size is still maintained by the buckle; and should swelling occur the lacing is loosened, allowing the strap to expand by means of a piece of vulcanized India-rubber inserted. As the swelling subsides the strap goes back to its original size, and is again laced. By this means the necessity of loosening the strap is avoided.

64.—CASE OF AMPUTATION OF THE HIP-JOINT.

Under the care of C. Guthrie, Esq.

[This patient, a man aged 50, noticed a swelling about the thigh eight years ago. A year before he was admitted, the pain began to be very severe, developed rapidly, and the man's health began to fail. As there could be no doubt of its malignant character, amputation was decided upon; but as several cases had happened where the disease had returned, if a portion of the shaft had been preserved, Mr. Guthrie decided upon amputation of the hip-joint. Considerable interest was excited by this operation, several of the most eminent surgeons being present.]

The patient was so placed that the ischia were a little beyond the margin of the table; and the sound leg (left) having been as widely separated from the affected limb as practicable, Mr. C. Guthrie placed himself on the man's right side, and prepared to use a knife, made for the purpose, about fourteen inches long and two inches wide at the handle. This knife was introduced horizontally from without inwards a little above the great trochanter, and the point made to emerge close to the scrotum, which was carefully held aside. By cutting horizontally along the anterior margin of the bone and then upwards, for about four inches, the knife was liberated, and the anterior flap formed. The latter was immediately raised by the assistants, and presented a rather unusual appearance, both from its size and the naturally considerable gush of blood which took place both from the flap itself and the lower traumatic surface. Mr. Guthrie now divided the capsular ligament, and run the point of his knife between the head of the bone and the cotyloid cavity, so as to divide the round ligament.

The limb at this time should have been strongly rotated outwards, but this could only be imperfectly done, as the rigid knee and the rather low table prevented the assistants from accomplishing their purpose. When the knife had separated the rotator muscles, the handle was close to the scrotum; and without changing its position, Mr. Guthrie made it glide along the posterior portion of the bone for about three inches and a half, and by cutting downwards made the posterior flap, thus completely separating in less than two minutes such a considerable portion of the patient's frame.

The assistants immediately covered the bleeding surfaces with sponges, and now began the very important business of securing the vessels. This was done first for the upper flap, whilst the lower was being compressed, and the hemorrhage became more and more feeble as the ligatures were successively and carefully placed on the arteries. The vessels of the lower flap were now secured in the same manner and with great rapidity, so as to render the loss of blood as inconsiderable as possible; and the two huge flaps soon presented an extensive, unequal, deep red, muscular surface, from which merely a little venous oozing was going on.

The patient became at this stage rather faint and pale, but a little cold water to the forehead sufficed to restore him. The flaps were now approximated, and their margins kept in contact by sutures, strips of adhesive plaster, and appropriate dressings. The patient's bed was brought into the theatre; he was gently placed on it, and seemed on opening his eyes to have retained a comparatively large amount of animation.

When the man had been removed, Mr. C. Guthrie addressed the gentlemen present, and stated that the method in which the operation had just been performed might be called Mr. Brownrigg's. He had been induced to remove the limb at the hip-joint, because the disease had returned in another patient likewise suffering from malignant disease of the femur, on whom he had performed amputation of the thigh close to the trochanter three years ago. This first patient had made a good recovery, and had married; but he unfortunately had a fall upon the stump; an abscess formed, the disease returned, and he died one year after the operation. The bone at the trochanter had at the time of the amputation been pronounced sound by very high authorities. No disease whatever of the viscera was found on a post-mortem examination. The limb just removed had been sent to the College of Surgeons to be injected and examined, and he (Mr. C. Guthrie) would be happy to acquaint his professional brethren with the actual pathological state of the part.

The patient remained very quiet and comfortable for the remainder of the day, and

spent a comparatively good night, sleeping for a couple of hours at a time. The next day was not marked by any untoward symptoms; the patient took sustenance, and was not complaining of any pain, when at two o'clock in the afternoon a gush of blood was noticed to take place from the dressings. Assistance was immediately procured, the dressings were taken off, but the hemorrhage had ceased, and when Mr. C. Guthrie arrived, no trace of bleeding was observed. A large and clean piece of lint was placed under the stump, so that the least amount of hemorrhage could be perceived, but it had completely stopped. It was not thought advisable to remove the sutures and separate the flaps, as it was apprehended that the shock might act very unfavourably upon the patient. But the latter was becoming more and more weak, and, in spite of ammonia, brandy, &c., he died at five o'clock.

A post-mortem examination was made on the following day, when all the viscera were found completely healthy, though in a very exsanguineous state. The stump contained a quantity of coagula which might have filled a large tumbler, and when these were removed, the vessel from which the hemorrhage had proceeded was looked for. No open mouth could be distinguished; but after water had been forced into the external iliac artery, the fluid was seen to come out from a vessel which was judged to be a branch of the circumflex artery. It is very probable that the hemorrhage from this vessel had stopped when the patient became faint, but that enough blood had been lost, as proved by the coagula, to lead to a fatal issue.

The unsuccessful results of this case indicate very clearly that it is advantageous to postpone the approximation of the flaps until reaction has taken place. Had the latter been immediately opened at the least sign of hemorrhage, the case might possibly have taken a more favourable turn. We consider this as an accident to be guarded against, but which does not throw any discredit on the operation itself. Many patients have been lost by secondary hemorrhage after comparatively trifling operations, and as the shock after amputation at the hip-joint is much diminished by the use of chloroform, the sources of danger are principally the loss of blood on the table and afterwards, and the subsequent profuse suppuration.—*Lancet, April* 30, 1853, *p.* 416.

65.—ON EXCISION OF THE KNEE-JOINT.

By R. J. Mackenzie, Esq..

[Not only has an unfavourable impression been produced against this operation, but severe censures have also been passed upon the operators. Mr. Park, of Liverpool, in 1783, first prominently noticed the operation, but it had previously been performed successfully by Mr. Filkin of Northwich. After these, Moreau operated in three cases, two of which were fatal. In 1809, Mülder operated upon a pregnant female—she died some months after from tetanus.]

The next notice of the operation is by Mr. Crampton, in 1823. "The operation in Mr. Crampton's first case can scarcely be said to bear on the question of excision of the knee-joint; not only were the patella and part of the tibia removed, but upwards of six inches of the thigh bone were taken away. The patient, however, lived upwards of three years after the operation, and then died from phthisis. Mr. Crampton, in his remarks on the case, says, that it "was one to which the operation of excision was not applicable." The disease had proceeded too far; for, even had it been possible to have removed the whole of the diseased bone, and that union had taken place between the femur and tibia, the limb, from its shortness, would have been useless. The operation was performed in the same year in a second case by Mr. Crampton. The girl, although a most unmanageable patient, made an excellent recovery. Six months after the operation, the femur and tibia were consolidated by a firm bony union. Eight months later, she is reported as being able to walk a distance of nearly five miles at once; and upwards of three years after the operation, Mr. Crampton says:—"I have examined the limb, and find that the femur and tibia are firmly consolidated; the leg and thigh are not in the slightest degree wasted, but the limb is considerably bowed outwards; she wears a shoe with a cork sole four inches thick; and, to use her own expression, 'is able to stand or walk the length of a day.'"

The operation was next performed by Mr. Syme, who, in 1829 and 1830, excised the knee-joints of two children, of seven and eight years of age. Up to this time the operation had only been performed in adults. The result in the second case was unsuccessful, the child having died about ten days after the performance of the operation. Writing in 1831, Mr. Syme gives the following satisfactory account of his first case:—"In the course of four weeks after the operation, the wound was all but healed, and the limb, before the expiration of three months, had regained so much strength that the patient could make some use of it in walking. It has been progressively improving since, and is still doing well. I have no doubt that ultimately it will be nearly as useful to him as ever; but even at present he would be very sorry to exchange it for a wooden one. He can walk and run, though with a halt, without the constrained appearance of a person with an artificial leg, and merely requires the *heel* of the shoe to be two inches higher than the other. The limb is stout and well nourished, and though slightly bowed outwards, does not occasion any disagreeable deformity; it allows a slight degree of flexion and extension." Seventeen years later, however, a much less satisfactory account of the same patient is given. In speaking of excision of the knee-joint, in 1848, Mr. Syme says:—"I tried the operation nearly twenty years ago on a boy, who recovered perfectly from it, and seemed at first to possess a limb little inferior to its fellow, except in so far as it was stiff at the knee. But in the course of time it was found that the growth of the two limbs was not equal, and that the one which had been the subject of operation gradually diminished in respective length, until it wanted several inches of reaching the ground, when the patient stood erect."

After Mr. Syme's experience in 1830, the operation seems, as far as I can ascertain, to have been abandoned till within the last three years. The results of the operation on the whole had been decidedly unsatisfactory.

In 1850, the operation was revived by Mr. Fergusson; and within the last three years the operation has, as far as I can ascertain, been performed thirteen times: in three cases by Mr. Fergusson, in six cases by Mr. Jones of the Island of Jersey, in one case by Mr. Page of Carlisle, in one case by Dr. H. Stewart of Belfast, and in two cases by myself. Of the results of these cases I shall give some details immediately. Of the thirteen three have died, two directly from the effects of the operation and one from dysentery. The remaining ten are, as far as I know, at present alive. In five the limb is already used freely in progression; in one the result, as regards the usefulness of the limb, is yet uncertain; in one, I am ignorant as to the result; in the remaining three, sufficient time has not yet elapsed to render the result certain, but of each the most favourable expectations may be entertained.

Such is a brief outline of the history of all the cases in which, as far as I can ascertain, the operation has hitherto been performed, and I think I am justified in saying, that an impartial review of these cases, especially of the later series, at least proves that the propriety of the operation is yet an open question.

[Dr. Mackenzie, after cursorily examining the cases of this operation occurring within the last three years, proceeds to defend those who have been censured for reviving the operation. He says:]

The propriety of attempting to save a limb by excision of the knee-joint, seems to depend on the three following considerations:—1st. Is the operation of excision attended by greater or less danger to life than amputation of the thigh? 2nd. In the event of recovery after excision of the knee-joint, is the limb more or less useful and seemly than a wooden leg? 3rd. Does the long confinement to the horizontal posture, which is necessary after excision of the knee-joint, in any measure counterbalance the benefits of the operation (if such benefits are proved) as compared with amputation of the limb?

A careful consideration of these questions and of the recorded results of the operation, led me several years ago to doubt the propriety of the operation having been rejected from surgical practice. I satisfied myself, by repeated trials on the dead body, that the operation could be performed without difficulty, and without the risk of wounding any important parts; and, as a teacher of surgery, I have been in the habit of mentioning to my pupils my impression that the operation had been rejected from practice on insufficient grounds. Knowing, however, the objection of my hospital colleagues to the operation, I never requested their sanction in carrying it into execution, till the late experience of Mr. Fergusson and Mr. Jones appeared to me

to warrant my urging the question more closely on their attention, and my performing the operation in the cases which I have related.

With regard to the considerations which I have suggested as principally bearing on the merits of the operation, I would submit,—1st. That the danger of the operation may be reasonably expected to be less than that attending amputation of the thigh. The wound necessary for the removal of the diseased bones is less extensive than the wound of amputation of the thigh, whether performed by the circular or flat operation. The large vessels and nerves are not divided in the operation, the parts involved in the incisions being principally the integuments and ligamentous apparatus of the joint; the medullary canal of the bone is not laid open, a point which has of late years been suggested as of some consequence in diminishing the dangers of amputation; the shock, which always attends, to a greater or less degree, the sudden removal of a large part of the body, is avoided.

Time and experience, however, can alone determine the comparative danger of the two operations. In the mean time, the results of the limited number of cases in which the operation has been recently practised, prove, as far as they go, that the danger to life is not great; and, unless some unforeseen accident should occur to the cases which are at present in progress of convalescence, that the danger is inferior to that of amputation.

2nd. With regard to the usefulness and the seemliness of the limb, I need only refer to the account I have given of the results of the operation in Mr. Jones's hands, to show that the limb may retain a degree of usefulness which can never be attained by the wooden leg in common use, nor yet by the most expensive and efficient artificial limb which I have ever seen; and if, in the days of Mr. Park, such a result could be obtained as that a man, whose knee-joint had been excised, could run up the rigging and perform all the duties of a seaman, surely, with all the resources of modern surgery, we ought to obtain an equally satisfactory result now.

3rd. The remaining objection to the operation is the tediousness of the convalescence. This, I think, unquestionably detracts, to a certain extent, from the benefits of the operation. I am doubtful, however, after all, whether the recovery can be proved to be on the whole more tedious than the recovery from compound fracture of the leg; in some cases even the limb seems to have been restored to usefulness as soon as the patient would have been able to walk on a wooden leg, had the limb been amputated. In Mr. Syme's case, for instance, "in the course of four weeks after the operation the wound was all but healed, and the limb, before the expiration of three months, had regained so much strength, that the patient could make some use of it in walking."

Mr. Syme, in another place, says, "It ought to be recollected, too, that, though recovery from amputation of the thigh is usually completed in three or four weeks, it is generally *at least as many months* before the patient can rest the weight of his body on the face of the stump, so as to use it in standing or walking."

Another objection has been brought forward against the operation which requires to be noticed, viz., that, when the operation has been performed on children, the growth of the limb has been checked, and that, consequently, from the unequal growth of the two limbs, that on which the operation has been performed becomes so disproportioned to the other as to be ultimately useless. The only practical proof of this being so, which I can find, is Mr. Syme's case; and I think it is possible that it might be attributed in this instance to anchylosis not having taken place. Experiments have been performed on animals to show that bones do not grow when deprived of their heads, but the results do not appear to be conclusive. A few years will be required to confirm this as a valid objection to the operation. Mr. Jones has, in the mean time, made accurate measurements of the limbs of the three boys on whom the operation has been performed, and will have an opportunity of giving further information on the subject hereafter. I have, in an earlier part of this paper, mentioned the fact, that the limb in one of Mr. Jones's cases had already, since the operation, grown considerably, and presented now no appearance of checked growth. As bearing on this question, I would be glad to know if the growth of the upper extremity is checked by excision of the elbow-joint. It is so, as far as I remember to have observed, only in a slight degree. Surely the numerous children who have undergone this operation at the age of six or seven, have not grown to adult age with the stunted arm and hand of little more than an infant. Supposing, however,

that the fact is so—that the limb is so much *respectively* shortened in after years—the objection applies only to the operation being performed on children, and has nothing to do with the question of the propriety of excision in the adult.

I have suggested that an error has, till lately, been committed in the performance of the operation, which has been allowed to interfere most seriously with its result. I refer to *the removal of the patella*. It is said that the patella is generally extensively diseased in affections of the knee-joint demanding excision or amputation: this, I have no doubt, is an error. The amount of disease to which it is liable is very limited—in the great majority of cases consisting only in its being more or less deprived of its cartilage, and of a rough, or perhaps carious condition of its articular aspect. The patella is rarely, if ever, the primary seat of the disease in affections of the knee-joint. When the disease commences in the bones, it invariably does so in the cancellated texture of the head of the tibia, or condyles of the femur. It is extremely rare that there is such extent of disease in the patella as to prevent its easy and effectual removal by the gouge, the body of the bone being left uninterfered with. The advantage of leaving the patella cannot fail, I think, to be very great. The natural form of the joint is preserved; the attachment of the extensor muscles is left undivided; the wound is less extensive; the annoying tendency to displacement forwards of the end of the femur seems, in a great measure, to be done away with; and there is every reason to believe that the consolidation of the bones will proceed more rapidly, and the limb ultimately be found both more useful and more seemly than when that bone is taken away. This is a point, however, which remains to be proved. In the two last cases, however, in which the operation has been performed by Mr. Jones and myself, the patella has been left, and the advantages of its having been retained are already apparent in each case.

I shall not lengthen this paper by describing what appears to me the best mode of performing the operation, but merely mention that the semilunar incision seems to me the most advantageous, as being the smallest by which the joint can be satisfactorily exposed, and as giving rise to less bleeding than the H-shaped incision. There is one point, however, to which I wish to direct attention. It has been recommended that a considerable portion of integuments should be removed by a double lunated incision, to prevent the redundancy of skin which might be expected from the large amount of bone removed in the operation. I believe that this advice, if followed, will lead to great annoyance. I have not removed any portion of integuments in the cases in which I have performed the operation, notwithstanding which, the retraction of the skin was such as to cause, in each case, more or less gaping of part of the wound. Mr. Fergusson mentioned to me that he had removed a small portion of integuments in the operation, in the case now in King's College Hospital, and that, during the patient's convalescence, he had much reason to regret having done so, as the retraction of the integuments was such as to leave part of the end of the femur uncovered, and a thin cicatrix only now covers this point of bone.—*Monthly Journal of Med. Science, June*, 1853, *p.* 526.

[At a meeting of the Edinburgh Medico-Chirurgical Society, after a paper had been read on this subject by Dr. Mackenzie,]

Mr. Syme said that nothing could be more praiseworthy than trying to extend the means of affording relief by surgery, but as every step in advance was necessarily experimental, it should be understood that there were two sorts of experiments—the *experientia erudita* and the *experientia vulgaris*. In the former, a process of reasoning led to the expectation that certain causes would be followed by certain effects; but in the latter there was no such foundation for the procedure, which was executed simply with the view of obtaining results. He thought it needless to detain the Society by showing that the only warrantable experiments on the living bodies of human beings were those of the former kind; and would endeavour to explain the considerations which induced him to regard excision of the knee-joint as a dangerous and unprofitable proceeding. The large size of the wound, which was just double that of amputation, and the want of a dependent opening for the matter to escape, must be apt to occasion a profuse and protracted discharge—dangerous directly from its exhausting effects, and indirectly from lighting up disease in the pulmonary or intestinal textures, especially in subjects predisposed to such derangements, as most patients requiring the operation were. The strong and irregular action of the muscles must render it difficult to prevent displacement of the bones,

impede their osseous union, and favour anchylosis, when it did occur in some awkward position. The ample experience obtained from excision of the elbow-joint—which he had himself performed little short of a hundred times—showed that many months, or years, or even a whole lifetime, might elapse before the wound was so completely consolidated as not to suffer occasionally from small collections of matter in and about the cicatrix, which interfered little with the patient's comfort, as they did not affect the usefulness of the hand or the strength of the arm, but would entirely unfit the inferior extremity from being employed as a support for the body. In children the danger of the operation would be probably less than in adults, and the chance of consolidation greater. But, on the other hand, there was reason to fear that the limb would not grow proportionally, and remain in the shrivelled condition usually consequent upon spontaneous anchylosis. The results already obtained were confirmatory of these theoretical considerations. Although the operation had been limited to cases favourable for recovery, a large portion of the patients, whose fate could be regarded as decided, had perished. In some cases there had been no osseous union; and in others, anchylosis with miserable deformity. Thus in Sir P. Crampton's only successful case—the famous one of Ann Lynch, who "could walk the length of a day"—it appeared from the bones which were in the Lincoln's-Inn-Fields Museum, that the tibia and os femoris were united at a right angle so that the progressive motion must have been of a very rare and remarkable kind; while the subject of Mr. Park's never to be too frequently quoted case probably made a better appearance, climbing up the rigging of his ship like the quadrumanous inhabitant of a tropical forest, than he would have done as a biped on terra firma. He therefore did not feel warranted to substitute this operation for amputation, which, when properly performed, relieved the patient with little risk, and enabled him to obtain an adequate support far more useful to a poor man and ornamental to a rich one, than could be procured through all the suffering, prolonged treatment, and risk of life attendant upon removal of the articulation. But in saying this, he begged it might be distinctly understood, not as an attack upon any other person, but simply as a defence for himself, for declining an experiment which did not in his mind possess the proper requisites of an *experientia erudita.*—*Monthly Journal of Medical Science, July*, 1853, *p.* 89.

66.—ON EXCISION OF THE KNEE-JOINT.

By Henry Smith, Esq., Surgeon to the Westminster General Infirmary.

[The success which has attended this operation since 1850, seems now to be in a fair way to set the question of its value at rest. Out of the three cases operated on in London during the last two years, two have died. The following are the particulars of the last case:—Emma Saville, aged 28, unmarried, noticed eleven years ago, that her left knee became swollen and painful, and, though it got well, yet it very often became affected in the same way. She had been admitted into King's College Hospital on various occasions for its relief. The last time she applied its appearance was as follows:]

Left knee much larger than the right, the chief difference being over the head of the tibia. The joint is bent outwards, as though there had been a partial dislocation. Considerable pain is experienced through the joint, and is much aggravated in the night. On rubbing the bones together, a very distinct grating is experienced; any attempt at motion on the part of the patient gives intense pain. There is no disease whatsoever of the soft parts, and the swelling is not great, and there does not appear to be any, or at least any quantity of, fluid within the joint. Her general health is weak; she has lost much flesh, and the countenance is of a sallow and unhealthy appearance; sleep is prevented at night by the pain.

The patient was placed under the treatment ordinarily adopted in such cases; the limb was bandaged from the toes, and was placed upon a splint, and perfect rest was enjoined. Under this treatment the patient experienced relief from pain, but permanent benefit did not result; the patient continued in her weak state of health, and became most anxious to have some operation performed, but refused to undergo amputation. It was therefore determined upon to perform excision.

Saturday, April 2, 1853, 2 P.M.—Excision of the knee-joint was performed by Mr. Fergusson. He did not remove any of the skin, as in the instance next related; but more of the femur was taken away, in consequence of the periosteum being stripped off from the bone for some inches. There was a considerable amount of disease in the joint; the cartilages had entirely disappeared, and it contained a quantity of cheesy strumous material. The head of the tibia was more implicated than any other portion. There was only slight bleeding during the operation. The wound was united by sutures; wet lint was placed over it, and the limb was enclosed in a proper apparatus, and suspended on the swing splint; and the patient was ordered half a drachm of laudanum.

3rd. Has had much pain and starting in the limb at night; pulse 160; had only slept one hour.

[Up to the 5th she took beef-tea and brandy every few hours. On the 7th she fainted, and on the 8th looked pale and coughed much. On the 11th the tongue became brown and dry. Pulse 130, and countenance anxious. On the 17th much worse; a severe rigor set in, and all the symptoms of purulent absorption were manifest, and she died on the 18th, evidently from purulent infection.

Unfortunate, however, as has been the result in London, in other parts the operation has been much more successful. Mr. Jones of Jersey, and Dr. Mackenzie of Edinburgh, have given it a fair trial. The former gentleman has operated five times, four of which were successful. Mr. Smith observes:]

It is to Mr. Jones, of Jersey, most undoubtedly, that the Profession is chiefly indebted for having furnished the most numerous, most important, and most satisfactory data respecting this operation. While I am writing this, I have received another communication from this gentleman, containing the details of a sixth instance in which he has excised the knee-joint. It may, with truth, be affirmed, that in all his cases, six in number, he has succeeded,—for dysentery, not the surgeon, destroyed the only one of his patients who is now in her grave. It is useless to attempt concealing the fact, that she did die of this disease, and not of anything else. Mr. Jones, in a letter to me, states, that everything connected with the operation was progressing most satisfactorily, and that "scores of persons died in the neighbourhood" of dysentery.

According to Dr. Mackenzie, there are two other authenticated cases in which this operation has been performed with success within the last two years,—one by Dr. Stewart, of Belfast, the other by Mr. Page, of Carlisle; so that, in fact, the entire number of operations of excision of the knee-joint has been thirteen since the proceeding was first revived by Mr. Fergusson; of these three have turned out badly, the remaining ten are alive; and if we take away Mr. Jones's single unsuccessful case, we have only two fairly attributable to the interference of the surgeon,—a proportion of deaths by no means great when compared with ordinary amputation through the thigh. There is still one point of great importance, in reference to this particular operation, which is to be considered.—viz., the utility of the limb as a means of progression after the joint has been excised, and a cure has been effected. The evidence on this subject, so far as it can be obtained at present, is on the one hand of a nature highly satisfactory, while on the other it is the reverse. In the remarkable case where Park first operated so successfully, the man returned to his occupation of a sailor, and "was enabled to go aloft with considerable agility, and to perform all the duties of a seaman;" surely this is more than could be reasonably expected. Mr. Jones wrote to me some time ago as follows concerning one of his cases:—"He walked without the assistance of crutch, stick, or any appliance whatever to the limb, up and down the largest room in the hospital, quite as fast as I could." On the other hand, Mr. Syme's patient did not, I believe, have much use of his limb eventually. Although the exact particulars of the condition and aptitude of the member have not lately been obtained, there is reason, however, to believe, that it is not satisfactory, as Mr. Syme has evinced great opposition to the operation.

However, there is no doubt that strong union of the parts in the site of operation does take place, and that, by careful attention to position, a very useful substitute for a sound limb may be effected. In some instances the union is only ligamentous, but in others it is bony, as was the case in Sir Philip Crampton's patient.

Here, however, the limb was not of very much use; and any gentlemen who will *take the trouble to walk* into the pathological department of the Hunterian Museum,

and examine the large glass case on the basement floor, will at once see the reason of this; for he will there find the preparation of the parts, and will observe, that the divided bones had become joined by strong bony anchylosis, almost exactly at right angles. Sir Philip Crampton informed a friend of mine, that the limb had not been kept steadily in the extended position after the operation; thus arose the awkward anchylosis. But this case, instead of proving anything against the operation, speaks much for it, as the parts are firmly knit together by bony junction. And doubtless this union might have been effected in a straight position.

In concluding these observations on the cases above detailed, I cannot avoid expressing my conviction, that excision of the knee-joint, as a substitute for amputation, may worthily occupy the attention of surgeons; and I doubt not that the merits of the operation will in time be fairly tested, as such enterprising men as Mr. Fergusson, Mr. Jones of Jersey, and Dr. Richard Mackenzie, have taken the subject up. We can hardly expect to meet with such success as obtains in the proceeding on the elbow-joint; but there is not any reason why the excision of the knee-joint should not prove to be less fatal than the amputation through the thigh, in which procedure large nerves and vessels are divided, and a considerable portion is suddenly taken away from the rest of the body. If time proves such to be the case, and if, also, it be found that the limb is as useful to the patient as an artificial leg, surgeons will feel bound to adopt the operation. If, on the contrary, a greater mortality attends the removal of the joint than the amputation, and if the limb which is preserved becomes inferior to an artificial substitute, they will be bound to reject it altogether. The experience which has been obtained within the last two years, inclines to the belief, that it may ultimately be an operation recognised among surgeons.—*Med. Times and Gazette, Aug.* 27, *p.* 213.

67.—CASE OF EXCISION OF THE KNEE-JOINT.

By George M. Jones, Esq., Surgeon to the Jersey Hospital.

[Mr. Jones is induced to publish the particulars of this case, owing to the conflict of medical opinion as to the merits of the operation, and because the operation was performed after a different manner to that commonly adopted. The patient, in the case, was a boy aged 12. He was admitted on the 12th October last, on account of a disease in the knee, of a year's standing. There had been inflammation, followed, it was suspected, by extensive ulceration of the cartilages. All the usual means tried to preserve the joint failed, and it was, therefore, determined to excise the joint.]

The operation was performed on the 17th of April last. A longitudinal incision was made on each side of the knee-joint, midway between the vasti and flexors of the leg, full five inches in extent; rather more than half the length was over the femur, and rather less than half over the tibia. These two cuts were down to the bones; they were connected by a transverse one just over the prominence of the tubercle of the tibia, care being taken to avoid cutting the ligamentum patellæ by this incision; the flap thus defined was reflected upwards, the patella, its ligament, and the joint, thereby exposed. The synovial capsule was cut through as far as it could be seen; the patella and its ligament were now drawn over the internal condyle, while the joint was kept extended. It was next forcibly flexed; the crucial ligaments, almost breaking in the act, only required a slight touch of the knife to divide them completely; the articular surfaces of both bones were thus completely brought to view, and nearly two inches of the femur and half an inch of the tibia were sawn off, the soft parts being drawn aside by assistants. The external condyle of the femur was found hollowed out by a large abscess, and it was necessary to saw off a portion of the carious bone, and to gouge the remainder, until healthy cancellous tissue was reached. The entire synovial membrane was in a state of pulpy degeneration, and was carefully dissected off. The hemorrhage had been rather great, but had now almost ceased, and no vessel required deligation. The blood was sponged out of the wound, the patella (after the diseased portion had been gouged out) and its ligament were replaced, as nearly as possible, in their natural state, the bones brought in apposition, the flap brought down and held by sutures, the limb bandaged

on a slight under-splint and laid in a box, the wound covered with moist lint, and the boy put to bed yet asleep. The operation occupied full twenty minutes, and was performed while the patient was under the influence of chloroform.

Opiates had, for some time, to be freely administered every night; and the boy's appetite, always excessively small, having entirely failed, the stimulating plan of treatment was followed out more rigorously than I had pursued it in other cases. The seventh day after the operation, a slough of some extent was perceived on the lower part and sides of the flap. This went on increasing for some days; the ligamentum patellæ was, however, never bared. Mild, stimulating applications arrested its progress; healthy granulations sprang up; and soon the suppuration, which was at one time very considerable, lessened in quantity. At present it amounts to a mere nothing, the wounds being now all but healed.

Not seven weeks have yet elapsed since this operation was performed, and it is most satisfactory to witness its favourable and rapid progress. The little patient never experiences the slightest pain in any part of the limb; he turns it from side to side easily and quickly, and without either assistance or appliance of any kind, can, while lying on his back, raise the leg from the hip upwards. The knee bows slightly inwards; but my previous experience in these cases leads me to believe, that a very slight mechanical contrivance will entirely remedy this. The patella is adhesive to the femur and tibia, and its ligament preserves its integrity.

The integuments covering the joint had been so much deteriorated by the disease itself, and perhaps also by the remedies used, as, together with the length of the flap, to account naturally for the slough. Probably two smaller flaps, reflected upwards and downwards from the centre of the patella, might have answered better.

I am very unwilling to be supposed to recommend this plan of operation, as one adapted to all cases of knee excision,—very far from it; there are cases in which it is altogether inadmissible; and I feel persuaded, that whoever adheres to one mode only, will often find himself wofully disappointed in the result. The general rule of acting according to the features the case presents, is quite as applicable to these particular cases as to others generally.

Preserving the patella, and not dividing its ligament, makes the operation more tedious and difficult; but this is a very secondary consideration, where it results in obtaining a more favourable issue. That it proved so in this instance is abundantly established by the fact already mentioned, that, in less than seven weeks after the operation, this patient is able to raise his foot without any assistance; while a young man who occupies the next bed, and in whose case everything has gone on favourably, was only able to do so in as many months.—*Med. Times and Gazette, July 2, 1853, p. 11.*

68.—PRACTICAL OBSERVATIONS ON AMPUTATION AT THE TARSO-METATARSAL ARTICULATIONS.

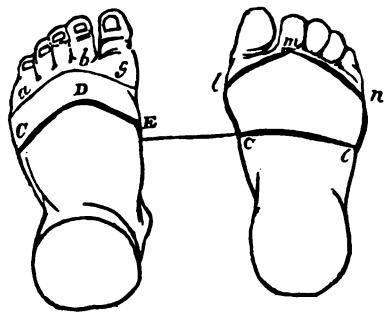
By Dr. Charles Edwards, Cheltenham.

Supposing the single or double flap formation at the option of the operator, in order, first, to get the line of cicatrix near the upper margin of the stump, and secondly, to avoid the painful and unnecessary dissecting-up of an anterior flap, I think it best to make but one flap—a plantar one.

To reach the line of articulations, and have a precisely adapted flap, ink the following lines:—First, a line near the roots of the toes, *a*, *b*. *g*, close by their commissures. Precisely parallel with this dotted guidance-line draw another arched line, commencing at the projection of the fifth metatarsal bone, or an eighth of an inch below it. This parallelism will prove an equal, if not superior guide to the articulation between the first metatarsal and internal cuneiform than any conjectural measurement from the projection of the navicular, which itself, in certain diseased states, is not easily felt. This arched line will be the course for the dorsal incision; the structures *retracted*, not *reflected*, will correspond to the joints.

Unite across the plantar surface the cornua of this irregular arc by a right line: this chord, *e*, *g*, will be the base-line of the plantar flap to which the knife should be *fully* carried.

It now only remains to mark its periphery, which will be determined by inking, if thought necessary, another arched line on the plantar surface, precisely bounding the roots of the toes, *l*, *m*, *n* (as *a*, *b*, *g*, on the dorsal surface).



a, *b*, *g*, commissure guidance-line. *l*, *m*, *n*, periphery of plantar-flap.
C, *D*, *E*, line of dorsal incision. *c*, *g*, base line of ditto.

Having thus accurately defined the measurements, I would conclude with a few observations on the plantar flap, the dorsal incision, and finally the management of the second metatarsal bone.

As to the plantar flap, commence with a strong scalpel at, or slightly beyond, either extremity of base-line, and deeply groove out the whole circuit of the flap from without, carrying your incision round by the plantar arched line till it meet correspondingly the other extremity of base-line. Finish this flap, not with a scalpel or bistoury, but with a small, straight-edged amputating knife, one stroke of which will smoothly reach the base by reason of its greater breadth. Thus, in addition to a more perfect outline of the flap than can be obtained *from within* after the disarticulation, by cutting *from without* no tendons are left projecting to be clipped. Some authors say, "Keep close to the metatarsal bones." If, however, you have, and leave too much muscle in this plantar flap, you will incur difficulty in bending it up over the stump, and much pressure and many sutures to keep it there: I speak to operators on the *living* body.

Secondly, as to the dorsal incision, see that the assistant who has charge of the arterial pressure presses perpendicularly to the surface, and does not disturb the parallelism, while the dorsal incision is being made, by unequal or, indeed, any tegumentary retraction.

Finally, with respect to the disarticulation, when from disease you cannot save the head of the first metatarsal bone, or leave behind that of the second with impunity, I have in an instant disarticulated the latter, without previously removing any projection of the first cuneiform, by the following method:—The plantar flap being formed as directed, and the union of its base extremity and the corner of dorsal incision clearly made, disarticulate the first metatarsal, then press the metatarsus, not downwards, but rather directly outwards (this manipulation admits of easier demonstration than description). The point of a scalpel, applied laterally, by a person knowing where to expect the articulation, will most readily penetrate it, and so the chief difficulty of the whole operation will be readily overcome by any dexterous hand.—*Lancet*, *April* 30, 1853, *p.* 405.

69.—PURULENT INFECTION, AND ITS EFFECTS ON JOINTS.

[In a paper read before the Medical Society of London, Mr. Bullock divided the subject into the following heads: 1st, secondary affections, not fatal; 2nd, those proving fatal; 3rd, the pathology and treatment. The first head was subdivided into—secondary affections following certain diseases, and those after operations. Examples of the former of these are mild cases of puerperal fever and gonorrhœal rheumatism.]

The following case was related in illustration:—A man, aged thirty, had been the subject of gonorrhœal discharge for some months, when he was seized with pain in his right elbow and left wrist; ulceration of the cartilages subsequently took place; in six months he recovered with partial anchylosis of the joints, and was then free from discharge. Here was a case of joint affection, of a severe kind, following a purulent discharge from the urethra; here apparently there was no inflammation of veins; here was no introduction of pus into veins, and yet it bore a strong analogy to cases where one or other was supposed to have been the case. What, then, was to be the explanation of the secondary inflammation in this case? It could not have been merely a coincidence, for gonorrhœal rheumatism was of no very uncommon occurrence, and this appeared but an aggravated form of it. He (Mr. Bullock) had been told by Mr. Lane that he had often seen an attack of rheumatism follow a collection of matter in a part which the patient had refused to have evacuated; and he had himself often noticed that patients suffering from phagedænic and sloughing sores had suffered severe pain in their joints. He would endeavour to explain the pathology in this way: That there were certain changes going on in the mucous membrane of the urethra, resulting in the secretion of pus. From some cause or other this process of secretion was interfered with; the fibrin, which was about to be formed into pus-globules, underwent a retrograde metamorphosis, and was carried on in the circulation, and consequently caused like actions to go on in the accompanying fluid. This resulted in an effort to get rid of the morbid and contaminating material, which was endeavoured to be done by some secreting organ, which either from its structure or function, or some other cause, was predisposed to take on morbid action. Among secondary affections following operations, and not fatal in their results, might be mentioned ulceration of the cartilages of joints, chorea, serous effusions, syncope, vomiting, and rigors. In illustration the following cases were read:—A man aged forty-six, the subject of a severe stricture of twelve years' duration, had No. 2 gum-elastic catheter passed and retained twenty-four hours, which was followed by ulceration of the cartilages of the shoulder-joint, and the formation of abscesses in its neighbourhood. A girl, aged 9, was operated on for the necrosis of the tibia. The operation was followed by phagedæna of the wound and chorea. A man, aged 42, had Holt's dilator used for stricture of the urethra; it was followed by shivering and effusion into the sheaths of the tendons on the dorsum of his hand. The first and last of these three were cases of synovial inflammation following the introduction of instruments along the urethra into the bladder. Here, as in the former cases, was inflammation set up in a distant part, of the same character, after injury to the urethra, where there was a secretion of pus; here the same explanation as before might be given, the constitutional symptoms and long continuance of the affection clearly showing that there was a blood-poison operating and keeping up the action. The other was a case of extreme interest—viz., chorea co-existing with phagedænic ulceration of an incised wound; in this case the amount of morbid material was probably small, and exerted its influence on the nervous system, and was finally eliminated by the natural emunctories of the body. Of secondary affections followed by fatal results might be mentioned—puerperal fever, purulent depositions in various parts, pericarditis, pleurisy, peritonitis, &c.; and in all the cases the author had seen, there was a marked rapidity of supervention of fatal symptoms, and from the first but small hope of recovery. How great, then, would be the boon could some conclusion be arrived at as to the *modus operandi* of the exciting cause of this disease. The following cases were then related:—A man, aged sixty-nine, had the operation of lithotomy performed; the second crushing was followed by purulent deposit in both knee-joints, and death on the fourth day. The post-mortem examination showed coagula in, and a slight thickening of, the prostatic plexus of veins; the iliac veins stained, and the venous system generally gorged with blood; ulceration of the cartilages of both knee-joints, and injection of the synovial membrane of both hips.—A man, aged thirty-eight, was operated on for stone by lithotomy. On the seventh day he had secondary hemorrhage from a large vessel which had been wounded and tied during the operation; this was followed by inflammation of the right arm, great constitutional disturbance, and death on the fourth day from the occurrence of the hemorrhage. At the post-mortem examination, the cellular tissue from the wound to behind the rectum was found infiltrated with pus, and a circumscribed abscess in the levator ani muscle; the cellular tissue of the right arm and

forearm saturated with sero-purulent fluid.—A man, aged thirty-four, had the operation of perineal section performed for stricture of the urethra; it was followed, on the next day, by rigors, and subsequently by pericarditis and pleurisy, and death on the tenth day. Post-mortem examination showed recent pleurisy, adherent pericardium, purulent deposit in the lungs, and deposits under the capsules of the kidneys; sub-arachnoid effusion, small coagula in, and slight thickening of, the prostatic veins, the remainder healthy.—A woman, aged forty-two, was operated on for ruptured perineum. She had sloughing of the wounds, and died of pleurisy and peritonitis. The uterus was found enlarged and inflamed, and pus oozed from the Fallopian tubes; there was recent peritonitis and pleurisy. Large quantities of opium were given in this case after the operation.—A boy, aged sixteen, had chorea following an opening made in the urethra through the perineum, of which he died. The autopsy revealed an abscess between the rectum and bladder, and another behind the pubis, and exposed bone and fibrinous vegetations on the mitral valve.—A boy, aged twelve, was seized, four days after a blow on his left leg, with pericarditis, pleurisy, and pneumonia, and died in less than forty-eight hours. The post-mortem examination showed purulent deposits in the right lung; in the substance of the left ventricle of the heart and in the kidneys recent pleurisy and pericarditis; pus under the periosteum of the tibia and femur.—A woman, aged forty-six, had an abscess in the palm of her right hand, following a wound with a rusty nail. It was opened, but matter subsequently formed at the back of the hand; this was let out by incision, but the patient died of secondary deposits in her knees. No inflamed veins were detected.—The last set of cases were interesting from the variety of causes producing the affection, and the number of different parts affected with purulent deposition; their inamenability to any kind of treatment. There was also to be noticed the small amount of pain felt by the patient, even when an important organ was affected. Could it be the extreme rapidity with which the vessels were relieved by secretion, thereby lessening the amount of distension of parts, and consequent pressure on nerves?

Pathology and Treatment.—By nearly all writers on the subject, Mr. Bullock said, the greatest prominence had been given to phlebitis, which had been unhesitatingly given as the primary cause of the affection; more difference of opinion had existed as to the mode in which the purulent depositions in various parts take place. Mr. H. Lee had been the first to throw any doubt on the importance of phlebitis as the primary cause of the disease, but rather considered it (the phlebitis) to be caused by the irritation of morbid material introduced into the veins. It appeared to the author that, taking into consideration that there are cases of undoubted "purulent infection" in which there is little or no evidence of inflamed veins, we must look further for the cause of this disease, though it must be acknowledged that phlebitis was a very frequent accompaniment of it and was caused by it; and moreover he thought there was no doubt that the poisonous matter which lights up the disease circulated in the veins, and consequently might be an exciting cause of inflammation, but that inflammation of the veins might be only a portion of the general inflammation existing in the part first affected, it being propagated along them to a distance by their continuity of structure. He took the same view of this disease as of typhus or cholera, or any other disease of that kind: that as these were the result of a poisonous matter circulating in the blood, so was this. He was supported in this by the fact that puerperal fever acts very often as any other epidemic disease, and that it (purulent infection) was most prevalent in hospitals and places where large collections of people were. He considered that the fibrin which was about to form pus in a wound or other part, from some cause, either atmospheric or local, did not do so, but it was carried on in the circulation and underwent a retrograde metamorphosis; that on reaching some secreting organ there was a tendency to throw off the morbid material; the unhealthy fibrin then took on a progressive metamorphosis, and underwent that degree of development it was about to do originally, and so formed pus; that in the case of joints it was shown by Dr. Alderson, in his Lumleian Lectures for 1853, that the structure and distribution of the bloodvessels were peculiar, there being a firm and unyielding tissue, in which, when the bloodvessels, excited by morbid material circulating in them, became distended, a certain degree of stagnation took place; then was the time for changes to take place, there being already a tendency to form pus; it was done there. In proof of the theory, the small quantity of pus introduced into the veins, and the extent and magnitude of the symptoms produced,

were to be looked at; that there must be some process of development going on in order that the morbid material might be distributed all over the vast area of the circulation. The treatment then must be directed to interrupt and destroy the process of morbid development which was taking place, and to check undue action in those parts in which it had unhappily taken place, and to evacuate pus if possible as soon as formed.—*Lancet, May* 28, 1853, *p.* 501.

70.—ON ANCHYLOSIS.

From a Paper headed "Berlin,—Its Medical Institutions, &c." By Dr. WILLIAM HALES HINGSTON.

[In *true* anchylosis there is no motion whatever, the bones having grown together; but in *false*, the motion is diminished but not destroyed. Cooper remarks, "No attempt should be made to *cure*, though every possible means should be taken to *prevent* a true anchylosis." Dr. Hingston observes:]

With such authority before us, and the authority of many more I might quote, it would require no small amount of courage to interfere with what has been designated "a favourable termination," "a desirable termination;" and a surgeon who would undo this wise provision of nature, might be pronounced reckless and bold. I confess that such would have been my own opinion had I read, and not seen, the treatment—the successful treatment—of *true*, and in many cases long-standing, anchylosis, by breaking up the callus. This mode of practice is not novel. It was tried many years ago in France, but the result of these experiments was such as to discourage others from repeating them. Violent inflammation of the joint, and the most disagreeable consequences, generally followed; and the patient was left in a worse condition than previous to those experiments. But the French erred greatly. Instead of breaking up the callus gradually and cautiously, they restored the perfect flexion and extension of the limb immediately, and then kept up the motion of the joint, in order to free the condyles from their abnormal adhesions. As already remarked, the consequences were frequently very serious. The majority of surgeons would not follow the example, and writers on surgery only mentioned this mode of treatment in order to caution the profession against adopting it.

The practice so successful under Langenbeck, and which has given rise to these remarks, consists in breaking up the callus certainly, but in a manner very different to that employed by Louvrier. The patient is placed upon his back, and chloroform administered until complete anæsthesia is induced; until, in fact, *the muscles cease to offer any resistance.* If the anchylosis be of the knee (the most favourable joint for the operation), an assistant, or assistants, fix the pelvis, and the surgeon commences gradual flexion, if the joint be in an extended state, or extension if in a flexed state. The force to be employed must be regulated by the surgeon himself. In cases of many years' standing, the force required, as might be supposed, is considerable; sometimes the whole weight of the body is necessary, but it must always be applied with care. When the callus yields to the external force, the amount of flexion is preserved until the next trial, the limb being exercised, passively, during the interval. A great degree of flexion is not to be desired at once; and the more cautiously and patiently the limb is managed, the less danger of violent reaction, and the greater probability of success.

Indeed, this constitutes the great difference between the treatment of Louvrier and that of Langenbeck, or between failure and success. When managed with due care, the inflammation set up is very trifling, indeed seldom sufficient to retard the cure. Frequently no reaction is perceptible. Every two or three days the patient is again subjected to the same treatment. Sometimes a couple of months are necessary to restore the functions of the joint perfectly, but three or four weeks are frequently sufficient. Although many years have elapsed between the occurrence of the anchylosis and the attempt at restoration, yet in most cases the callus may be broken up, and the integrity of the joint restored. It is absolutely requisite, however, that the patient should exhibit no tendency to scrofula, and this the more especially if the anchylosis be the result of scrofulous inflammation or ulceration.

From the want of exercise of the joint, the limb is usually much smaller than the sound one. Sometimes almost total atrophy of the muscles is the consequence, but a

short time suffices to restore them to their original volume. In concluding these remarks, I feel perfectly justified in supporting the claims this mode of treatment has to be admitted among the regular operations of surgery. And as anchylosis, as a result of disease of, or injury to the joint, is unfortunately of frequent occurrence, any mode of alleviating the subjects of it should obtain a fair trial, especially when supported by experiments.—*Glasgow Medical Journal, July*, 1853, *p.* 178.

71.—ON THE TREATMENT OF CONTRACTIONS AND ANCHYLOSIS OF THE KNEE AND HIP JOINTS, BY FORCED RUPTURE.

By Dr. Philip Frank, Manchester.

[After making some general remarks, Dr. Frank describes the method practised by Mr. Langenbeck, since 1847, the knee-joint being the one supposed to be affected]

The patient is placed on his back, and put under the full influence of chloroform; as soon as the muscles become entirely relaxed, the patient is turned round on his belly; an assistant holds the head in a raised position, to prevent respiration being impeded, and to facilitate the further inhalation of chloroform, if necessary. The patient must be so placed, that the patella of the bent knee rests on the anterior margin of the operating table. The pelvis is fixed by the hands of assistants. The operator then clasps with one hand the femur just above the popliteal fossa; with the other, the leg, just above the ankle, and by alternate flexion and extension, practised with more or less power, according to the nature of the case, restores the mobility and the normal position of the joint. A loud crepitus attends the rupture of the adhesions. Should the strength of one hand of the operator prove insufficient, the femur is held down by an assistant. The operator clasps the leg with both hands, and produces, either by strong gradual pressure, or by sudden jerking movements, the rupture of the more powerful impediment. Even firm osseous bridges are thus made to yield with a loud snapping sound. This was once, in a case of undoubted osseous anchylosis, so loud as to cause the mother of the patient, who was sitting in an adjoining room, to swoon. If, in course of the operation, the tibia threatens to luxate backwards, and particularly, as is often the case, a consecutive subluxation is already present, especial care must be taken to support the joint by pressure on the posterior surface of the upper end of the tibia. Still, luxation is often unavoidable, its mechanism depending on pathological conditions of the part, which art is unable to change. We refer to those cases where, in consequence of large defects of the inferior and posterior surfaces of the condyles of the femur, consecutive subluxation has supervened during the course of the inflammatory disease. A perfect luxation is in these cases more probable during the violent forced extension, if the patella is so firmly anchylosed with the femur as to present an invincible impediment to the pressure of the anterior surface of the tibia against its inferior margin. The tibia is often compelled to describe a circular motion backwards, the centre of which is situated there, where tibia and patella come into mutual contact.

These luxations of the tibia backwards form complications the more unpleasant, because the conditions under which they originated are the same that form serious impediments to the re-position; and if the re-position were to succeed, to maintain it. It is not possible to lay down any rule whether the joint is to be extended at the first attempt, or whether this is to be effected by repeated operations. Alarming tension of the skin, which, after long suppurating disease of the joint, is often firmly attached by cicatrices to the parts beneath, renders it judicious, at the first attempt, to effect only a certain degree of extension. If we have reason to believe that the osseous epiphyses are diseased, and if the resistance during the extension is of any magnitude, considerable caution is called for, as fractures are to be apprehended. Here, also, it would be more judicious to effect perfect extension by repeated operations. According to the practice of Mr. Langenbeck, carious and necrotic processes in the epiphysis need not deter from practising forced extension in a cautious manner. In young individuals this is a matter of the highest importance; for, during the long space of time too often necessary to the cure of these processes, atrophy of the

extremity can ensue, thus causing disproportion of the limbs. Add to this, the contraction can increase, and that the longer the abormal position of the joint is maintained, the more serious and considerable alterations of the parts may supervene. Nor does the alteration of the abnormal position of the joint appear to be devoid of influence in effecting a more rapid cure of these processes. This favourable influence can, with some certainty, be expected, where ulcerative processes supervene on those parts of the epiphysis which, by the abnormal position of the joint, are exposed to an undue degree of pressure. The tibia, in cases of contractions of the knee-joint, being generally more or less in a state of abduction, the external condyles of the tibia and femur are thus exposed to a strong mutual pressure, carious processes in either one or the other are frequently the result, and in these cases the beneficial results of meliorating the false position are most obvious. A short time since we saw a case in the private practice of Mr. Langenbeck, where, in addition to a contraction and spurious anchylosis of the knee-joint, there was a large abscess in the external condyle of the tibia. This disease of the bone had persisted a long space of time, in spite of every treatment; but the joint having been stretched without any evil consequences, a remarkable melioration took place.

But extreme caution is necessary in cases of central necrosis, so often found to extend from the inferior part of the diaphysis to the epiphysis of the tibia or femur, and often communicating with the cavity of the joint itself. The only case among 150 of anchylosis treated by Mr. Langenbeck by forced rupture which terminated fatally, was a case of this kind. We shall afterwards speak of this case at large.

In our dissertation on contractions and anchylosis, we have expressed our full approbation of the opinion first promulgated by Bonnet,—viz., that it is not only justifiable, but even strictly indicated, to stretch a contracted joint, although inflammatory symptoms may still exist. The theoretical presumptions by which this practice is vindicated are too well known to the profession to need any further discussion. It is a practice which has been crowned with the most eminent success, as all those conversant with the works of Bonnet are aware of. A most brilliant case of this kind, which occurred in the practice of Mr. Langenbeck, is subsequently related, which will testify more forcibly in favour of the proposition we advance than the most eloquent arguments. This practice is, of course, contra-indicated if the organism of the patient is in an advanced state of debility, where a dangerous and local re-action might be apprehended. According to the experience of Mr. Langenbeck, a still existing chronic-arthritic process can alone be regarded as an absolute contra-indication. If this process has terminated, contractions of the joint can be successfully treated by forced extension. The deep alterations known to be produced on the articular surfaces by the chronic-arthritic processes do not permit us to expect the restoration of the normal functions of the joint.

It will be no matter of surprise, that forced extension being practised under the precautions enumerated, we have no account to give of serious accidents having supervened during the operation. The skin was never ruptured. Only in one case superficial excoriations were observed in the popliteal fossa. We never saw the popliteal artery ruptured as it was by the machine of Louvrier, nor was ever one of the large nerves lacerated. Only once after forced extension of an anchylosis at an acute angle, anæsthesia supervened in that part of the skin supplied by the saphenus major nerve. In a short time, however, the normal sensibility returned. Nothing more serious than a distension of the nerve can therefore be surmised. Where a subluxation of tibia backwards existed before the operation, it of course became more evident after extension had been performed. Only in two cases, one of which occurred in the Royal Surgical Clinic, the other in the private practice of Mr. Langenbeck, the luxation was rendered perfect. In both of these cases, it was impossible to detach the anchylosed patella from the external condyle of the femur. All the injuries produced by the operation being subcutaneous, the re-action after a proceeding apparently so dangerous never attained a serious character. Of constitutional symptoms nothing but a slight febrile irritation is on record.

As far as local action is concerned, in most cases nothing but a superficial reddening was observed. In some cases a slight inflammatory infiltration of the parts surrounding the joint took place; in others, small sugillations were noticed. A suppurative phlegmon was never remarked. These symptoms quickly yielded, in *all cases, to the* employment of cold applications. Violent pains in the distended

muscles always followed the operation. In several cases pains increasing on pressure were complained of on the anterior surface of the epiphysis of the tibia. We do not hesitate to ascribe these to violent contusions to which the part is exposed in attempting to detach the anchylosed patella. They were most marked in those cases where this detachment was attended with the greatest difficulties.

The after treatment is based on two indications: the first, to preserve the degree of extension obtained; the second, to endeavour to restore the normal functions of the joint. After forced extension has been practised, the muscles have a decided tendency to return to their former condition. We have seen, that muscles which have been contracted during a space of ten years, are not exempt from this tendency, —a fact which sufficiently refutes the opinion of those who assert that muscles under prolonged contraction utterly lose their vitality. Pathological anatomy teaches us the comparative rarity of total degeneration of the muscular fibre. It is worthy of remark, that, in a few cases of recent date, where we cannot admit of a total degeneration having ensued, the tendency to recontraction was very inconsiderable; so that a pasteboard splint, fastened by a common roller in the fossa poplitea, was sufficient to maintain the extension. In most cases, this is not sufficient, and we have then either to have recourse to a bandage of gutta percha, or, to what is better still, Stromeyer's apparatus for the extension of the knee-joint,—an apparatus which, in the further treatment, is as indispensable as it is efficacious. Sometimes the machine, which must always be applied during the narcosis in the degree of extension obtained during the operation, is tolerated for several days, unattended with severe pain. In most cases it is not possible to maintain the perfect extension of the joint for any length of time after the operation. The violent pains, attended by spasmodic contractions; the acute sensibility of those parts of the articular surfaces, so long unaccustomed to mutual contact, usually compel us to relax the machine, in order to allow the joints to re-assume a greater or less degree of flexion.

The loosening of the knee-cap alone is often sufficient to afford relief. In some cases it was necessary entirely ro remove the apparatus; the degree of flexion which existed before the operation then soon returns. In the course of twelve or twenty-four hours, the pain in the muscles and the joint generally subsides so as to allow the extension by means of the machine to be recommenced. If the first operation did not succeed in producing perfect extension, and if the still existing adhesions rendered its consummation by means of the gradual force of the machine impossible, Mr. Langenbeck is wont, after the lapse of two or three weeks, to repeat the forced extension by means of chloroform. By this second operation, the extension is usually rendered perfect. In some cases an obstinate recontraction of the muscles alone demands their repeated distension in the narcosis. The re-action, after this second operation, is generally less considerable than after the first. We have seen cases where the patient walked about with the machine free from pain two days afterwards. Where a subluxation of the tibia backwards existed, the apparatus of Bonnet for extension of the knee-joint was applied with obvious success. In the two cases where the luxation was perfect, and in others where it was very considerable, all attempts at reposition proved in vain.

Mr. Langenbeck has expressed it as his opinion, that the subcutaneous division of the two lateral ligaments might be of some service in these seemingly hopeless cases. Where a considerable degree of abduction prevailed, which, if existing together with the flexion of the tibia, always becomes more marked after the extension has been effected, an apparatus combining the mechanism of Stromeyer's machine for the extension of the knee-joint with that generally in use for the treatment of the genu vulgum, will be found of considerable service.

Should an evident contraction of the external lateral ligament be present, a subcutaneous division which we have several times seen practised with eminent success by Mr. Langenbeck, in the treatment of genu vulgum, is here advisable. In those cases where large defect in the articular surfaces of the external condyles of the tibia or femur exist, every treatment directed against the abduction will of course prove ineffectual. Those conversant with pathological anatomy will remember cases of this nature, where the external condyle of the femur rests in a deep hollow of the caput tibiæ. A fortnight or three weeks after the operation,—often sooner,—the patients wearing the machine are able, with the assistance of a stick or crutch, to walk about the room, and after some time, without either, if there is no luxation of

the tibia backwards, no defects of the inferior and posterior parts of the condyli femoris, which will always favour the re-development of the muscular contraction; and if the extremity has not become too weakened by long disuse, the machine may also be omitted.—*Med. Times and Gazette, August* 6, 1853, *p.* 134.

72.—OPERATION FOR KNOCK-KNEES.

[In the proceedings of the Medical Society of Würzburg, Dr. Mayer of the Orthopædic Hospital reports the following case.]

John H——, a strong and healthy-looking boy of fifteen, son of a baker, and employed in his father's business, was found, on admission into the Orthopædic Hospital at Würzburg, to have the right leg diverging about seven inches, and the left about eight, from the direction of the corresponding thigh, as seen in the first figure of the accompanying sketch.

Fig. I. Fig. II.

On the 14th of August, 1851, the lad having been put under the influence of chloroform, Dr. Mayer made an incision beginning three-quarters of an inch below the insertion of the ligamentum patellæ, and curving downwards so as nearly to surround the front and inner (or mesial) side of the head of the tibia. He then turned the flap upwards, and divided the periosteum in the line of the first incision, and afterwards with Heine's cutting-needle separated the periosteum from the outer and posterior surface of the tibia, so as to prepare for the use of the saw. To protect the soft parts in that situation during the sawing, a strip of watch-spring, about half an inch wide, was introduced between the denuded bone and the periosteum. Dr. Mayer then, with a round saw, made two incisions converging towards the posterior part of the tibia, and meeting about a line and a half from the surface, without therefore quite cutting the bone in two. The wedge thus excised was about five lines thick at its base, and was easily removed by the forceps. The wound was cleared of bone-dust by forcible injections of cold water, after which, through the flexibility of the remaining isthmus of the tibia and the mobility of the fibula, no difficulty was found in bringing the cut surfaces of bone into close apposition. The outer wound was brought together with the greatest accuracy by needles and ligatures (as for hare-lip), the hemorrhage being quite inconsiderable. The leg was then put into one of Boyer's hollow splints, used for fracture of the patella.

Half an hour after the operation, as through the perfect apposition of the divided parts no discharge of any kind was visible, the wound was covered with a thick layer of collodion, and upon this drying the ligatures and needles were removed. The traumatic reaction was very slight, and on the fourth day the external wound (five inches long) had perfectly united. The leg was now left quiet in the splint for twenty-three days, when Dr. Mayer had the pleasure of finding that the incised surfaces of bone had united also. The next day the patient was allowed to walk in his room with crutches, and a few days afterwards in the garden without any artificial support whatever.

On the 3rd of October the other leg was operated on in the same manner and

with the same success. He left the hospital, free from deformity, and with a firm and natural gait, on the 19th of November.—*Lancet, June* 18, 1853, *p.* 557.

73.—ON DISEASES OF THE SPINE.

By Samuel Solly, Esq., F.R.S.

[The diseases to which Mr. Solly particularly alludes commence in the ligaments of the spine, either from cold or by direct injuries, as a blow or fall. The first case is from the notes of Mr. Blake. The patient had worked at a gas factory, and was admitted into St. Thomas's Hospital, Oct. 26, 1852.]

"Exposed much to heat and cold, but enjoyed good health till fourteen weeks ago. About that time, noticed a severe catching pain in the right loin upon attempting to lift the iron scoop used in his employment; lasted about two days; was under treatment, and got better. Subsequently, the body became covered with a thick rash, with formication over the arms, trunk, and front of the legs, but without loss of power. Had diarrhœa and pain in the abdomen; was under treatment six weeks, and recovered. Returned to work on a Monday, but, not being strong enough to keep on, did not return again till the following Friday, but obliged to give up after two nights' work, on account of weakness. Remained at home for about a fortnight; at the expiration of that time, while walking, had a severe pain in the back just between the shoulders. The same night, this pain in the back continuing, he noticed a severe tingling in the left shoulder and along the side of the arm and forearm, followed by numbness. Applied a mustard poultice to the back and forearm; found afterwards that he had very little use in the arm, and no relief from pain; was cupped, and applied a liniment, but without any beneficial result; also tried continuous poultices for a fortnight, without relief. Cannot rest upon the shoulder without pain and uneasiness."

The deduction which I make from this history is, that, in the first instance, this man was attacked with rheumatic inflammation of the ligaments of the lower cervical portion of the spine, extending from thence to the theca vertebralis, accompanied by some effusion on the cord. The severe catching pain in the right arm, on attempting to move his scoop, is not characteristic of simple rheumatic affection of the muscles. This pain is followed by a severe tingling down the arm. Now, I need only remind you of what takes place if you strike the ulna nerve, as it runs over the inner condyle of the humerus, or, in ordinary language, the funny-bone. The tingling is succeeded by numbness; in other words, the nerve which was first only irritated, is now compressed and partially paralysed. I dare say that most of you know the sensation of numbness which results if you go to sleep in your chair, overdone by your nocturnal studies, with one leg crossed over the other. When you awake, you find your leg still asleep; it is numbed from the pressure of the popliteal nerve on one side by the knee of the other leg. But, to return to the case.

Oct. 28. Treatmet: Hydr. iodidi gr. i. ter die; moxa to side of spine.

Nov. 6. Mouth a little affected; pain and uneasiness less on lying on right side; still continues on the left shoulder. Pil. bis in die.

8th. Gums very tender. Pil. omitted.

17th. Much better. Only complains of numbness along forearm and two last fingers.

29th. All pain and uneasiness left him.

Dec. 4th. Cured.

If this man had not been actively treated, both before his admission by Mr. Else, who kindly sent the man up here, and had not this, too, been followed up, on his admission, by complete salivation, he would have had ultimately more advanced disease of the cord, and, in all probability, entire paralysis. Under the continued use of mercury, and steady counter-irritation, the deposit has been absorbed, and the poor fellow restored to health.

[Although in our large hospitals we frequently meet with cases in which the lower half is paralysed from fractured vertebræ from a fall from some great height, in which state the patient lingers rarely above some days, we do not often find in

such institutions cases of slighter injury, perhaps little attended to, but which may be the first step to serious consequences in after life. Mr. Solly records an interesting case of this kind.]

The subject of it was a fine young man, about 23 years of age. About two years and a half previous to his consulting me (on the 4th of September, 1852), he fell from a height of sixteen or seventeen feet, with his back flat on a hard gravel walk. He was stunned at the time, though he did not strike his head directly. He received immediately the best advice, was bled from the arm, and leeched over the left hip. He was very sore, and had severe headaches for some days afterwards, and was not able to walk until seven or eight weeks had elapsed from the time of the injury. He was then examined by several medical men, and pronounced sound. After this, he went abroad, and lived rather freely. Just ten months before he consulted me, he began to suffer from involuntary seminal emissions, accompanied with great feeling of weakness in the back. About two months after these first appeared, he remembers finding a swelling on the left side of the loins; but this inconvenienced him so little, that he did not even mention it to his medical attendant, who treated him for dyspepsia, ordering him plenty of horse and pedestrian exercise, with tonics; but he continued to get worse, and was obliged to return to England. On his arrival, he applied to an eminent surgeon, who treated him for the spermatorrhœa with the caustic catheter. He remained under his treatment for two months, but without improvement, when his father brought him to me. From the history which I elicited, by a careful cross-examination, I came to the conclusion that the spermatorrhœa had a spinal, not generative origin. On stripping him, I found an elongated swelling, about four inches in length, on the left side of the lumbar vertebræ. It did not fluctuate, but it was elastic.

On rapping the spine in this situation he suffered a distinct, though not severe, thrilling pain, shooting from the spine down the legs, with some numbness. He now stated, that he occasionally suffered from the same kind of pain when walking or riding, and from the motion of a railway carriage. He also complained of a feeling of weakness in both legs, but more especially in the right. I was also informed, that he slightly dragged that leg in walking, and that he could not balance himself naturally. His countenance was anxious, and he looked out of health. The nocturnal emissions were occurring frequently, without erection or pleasurable sensations. I found spermatozoa in his urine, on examination under the microscope.

Putting all these facts together, I came to the conclusion, that the spine had been injured by the blow from his fall about two years and a half previously. I was rather afraid, from the swelling in the mass of the erector spinæ muscles, that an abscess was forming in that situation, and that the disease was not limited to the ligaments. Nevertheless, I had great hopes that it was not so serious as that, inasmuch as he bore firm pressure and rapping on the spine too well for there to be much serious disease of the bones; but I had no doubt of there being chronic inflammation, with some deposit of the ligaments of the vertebræ, and also of the theca vertebralis.

With this view of the pathology of the case, I ordered him to be confined to the house, and almost entirely to the sofa, to have a large moxa made over the swelling, to take quinine, in doses of two grains ter in die, in the infusion of roses, with sulphate of magnesia. To remain quietly in the country; scarcely move off the sofa; on no account to ride, either on horseback or in any kind of carriage, railway, or otherwise; to have meat, but not to take any wine or beer.

On the 24th of September I changed this to the carbonate of iron in ten grain doses, with pil. aloes c. myrrh. at night.

On the 22nd of October, 1852, about six weeks from his consulting me, I received the following from his medical attendant in the country:

"I am glad to say the —— V. T. is going on as favourably as when you saw him. The issue discharges well. He has not any numbness on tapping the spine, or any disagreeable sensation. He has had several seminal emissions, but they have been attended with natural feelings, and have not left him in the weak, nervous state as when they occurred some months ago. When I saw him yesterday, he complained of being weaker in the right leg than in the left, but not in any pain."

From this date he gradually but steadily improved—the issue was healed on the *4th of December*, and now (January, 1853) is quite restored to health; the swelling

has been entirely absorbed, and on both sides the loins are exactly the same size and shape. The nocturnal emissions have ceased; the urine is free from spermatozoa.

Feb. 7. He has all the appearance of health, and, though still nervous about a relapse, he has no single sign indicating it.

He can bear any tapping on the spine from the top to the bottom. He has been out with his gun for several hours during the day, and feels no weakness or unnatural sensation in the lower extremities.

The result of this case is highly satisfactory, and it must encourage you to pursue a similar plan of treatment in a case in which the pathology is similar; for I do not exaggerate when I say, that, if this disease had been further neglected, it must have terminated in complete paralysis of the lower extremities.

You must not confound this class of cases with another, and that of a wholly different origin, and in which the pathological condition is likewise different. I refer to a form of paraplegia, which comes on so insidiously that the sad victim of it is almost lost before he is aware that his health is seriously deranged. The disease is unaccompanied with pain, and it generally occurs to those whose attention is so drawn from themselves by active mental exertion that they often pay no attention to the first symptoms of disease, regarding them as trivial and unimportant. The cases we have just been analysing had both an inflammatory origin; the cases to which I now direct your attention, are, I believe, anæmic from the first; they are cases of permanent spinal exhaustion, and you will see, therefore, the importance of a correct diagnosis, as the treatment which, in the one case, would cure your patient, in the other, would aggravate his malady.

The disease commences with slight numbness of the lower extremities; this is followed by some loss of power; there is no pain in the spinal region at all; when you examine them, you may rap the spine, from the neck to the rump, and the patient does not shrink. You may apply the hot sponge, but this elicits no evidence of disease of the vertebral column.

The history will assist you if you strike the right key. You find no evidence of your patient having ever received any injury to the spine. He cannot account for it at all. If, however, you ask him whether he has had much sexual intercourse, he will say, if he is honest, yes; but more probably he will not acknowledge to it immediately, but when you tax him directly with not having been satisfied with the caresses and charms of one siren, but that two claimed him for their own, and that his animal pride would not allow him to stint them, he will generally acknowledge to the truth of the soft impeachment. If, on the other hand, he says indignantly, that he never had connexion with a woman in his life, it is almost certain that he is the victim of that dread delusion—masturbation.

In the treatment of these cases you must avoid all antiphlogistic measures, for they only do harm. The first thing is to stop the exciting cause, and this is often, strange as it may seem, the most difficult part of your task.

I have known men of sound sense on all other matters, men whose judgment is of the greatest value to their clients, such slaves to the venereal appetite and their own ideas of pleasure, that they would submit to any plan of treatment that you like to propose, yet would not abstain from copulation, or give up their ordinary exercise and mental employment. I remember once saying to a patient, who consulted me for this malady, and whom I found perfectly deaf to all my advice on this point, "The best thing that could happen to you would be to be pitched out of your phaeton, and to have a bad compound fracture of the leg, which would confine you to your bed and your back for at least two months." Now, it did so happen, that this gentleman met with an accident, though unfortunately for him not so serious as to confine him for more than a month or six weeks; but even this did him so much good, and he rose so much better, that he forgot all his good resolutions, pursued the same course again, and is now perfectly, and I fear irrecoverably, paraplegic.

Unless these cases are treated very early, you can do little or nothing with them.

Rest, bodily, mentally, and erotically, is the most important point; and if your patient will not submit to rest, entire rest, you had much better take your leave without prescribing; for all the medicine in the Pharmacopœia will do no good without the rest.

As regards medicine, I have found, and it was first mentioned to me by my kind friend Sir Benjamin Brodie, small doses of the tinct. lyttæ, ten to fifteen drops, with

from two to four grains of the sulphate of zinc, the best. A generous, but not a stimulating diet, must be advised.—*Med. Times and Gazette, April* 30, 1853, *p* 439.

ORGANS OF CIRCULATION

74.—ON WOUNDS OF BLOOD-VESSELS OF THE LOWER EXTREMITIES.

By William Lawrence, Esq., F.R.S.

When arteries under the calf of the leg are wounded it is difficult to follow the well-founded and generally-received rule of exposing and securing the injured vessels, even under the most favourable circumstances; that is, if we see the case at an early period, when no considerable swelling has occurred, and the natural relations of the surrounding parts are not obscured by ecchymosis. Frequently we do not know what vessel is wounded, nor the precise locality of the mischief. Sooner or later, and often very quickly, the whole limb becomes swollen by extravasation of blood, while all the soft structures may be lacerated, contused, and infiltrated with blood. Exploratory incisions for discovering the injured vessel, would be undertaken with very little chance of success; in such a state of limb, they might be attended with dangerous loss of blood, and would certainly involve the necessity of extensive and deep incisions in the injured parts. Thus we come to the conclusion, that amputation is necessary in some of these cases, in order to prevent worse consequences. An example of this kind is afforded in the case of a patient who, although recovered from amputation of the thigh, has not yet left the hospital.

Case.—Violent Contusion of the Leg—Rupture of the Anterior Tibial Artery—Amputation of the Thigh—Recovery.—John Connor, aged forty-three, a labourer, of tolerably stout frame and intemperate habits, was admitted into the hospital on April 5, 1853, about 11 P.M., being at the time very drunk. He was brought in directly from a neighbouring street, where he had been knocked down by a fire-engine, of which one or both wheels had passed obliquely over the back of the leg from below the calf to the knee The engine weighed 26 cwt., and there were fourteen men on it at the time.

On the next day, the limb, especially in the situation of the calf, was greatly swollen and tense, with slight livid discolorations, giving it a mottled appearance. There was no external injury,—not even a graze. The anterior and posterior tibial arteries pulsated, but so feebly, that some doubt was entertained on the point. Messrs. Archer, on whose accuracy I rely implicitly, verified the fact by feeling, at the same time, one of them an artery in the foot, the other the radial: the numbers corresponded exactly. Thirty leeches were applied in the evening, from increase of pain, which had been considerable during the day.

7th. Relieved by the local bleeding, which had been copious; but he did not sleep. An opiate at bed-time.

12th. The limb has been in more or less pain; and he has rested badly. Last night, great aggravation of suffering occurred in the calf of the leg, extending to the ankle and the heel, and still continuing. It entirely prevented rest. The limb was now enormously swollen from the ankle to the ham, and as hard as a board. This extreme tension, with severe and unremitting pain, urgently required relief. Accordingly, having found some little yielding to pressure on the external aspect of the limb, I made an incision, six inches in length, from a little below the head of the fibula downwards, and then opened the fascia, which was extremely tense, to the same extent. The divided integuments gaped widely, and the muscles protruded at the slit in the fascia. A small quantity of dark liquid blood flowed from the wound. Thirty minims of tinct. opii at bed-time.

13th. He was easier after the incision, and slept tolerably well during the earlier part of the night; but pain returned with great severity towards morning, and it still continues in the calf, ankles, and heel. The entire circumference of the limb is swollen, with the same incompressible hardness. Pulse 92, small and soft; countenance worn and anxious.

15th. Great and continued suffering, with little rest in the two past nights,

although two half-drachm doses of tinct. opii were taken each night. An incision of some inches through the integuments and fascia was made, on the inner side of the limb, where the tension seemed rather less than elsewhere, but with no useful result.

16th. As the formidable mischief in the limb, depending obviously on serious injury of some deep-seated vessel or vessels, continued unrelieved, without any prospect of change, except to a more dangerous condition, amputation was the only means of saving life. With the concurrence of my colleagues, I proposed it to the patient, and performed it with his unwilling assent. The alternative of searching for the wounded vessel, by an incision in the calf, and, if it could not be found, proceeding to amputation, was mentioned. Such a course seemed to me altogether objectionable, as imminently dangerous to life.

The patient was brought under the influence of chloroform, and the limb was then removed by the circular operation. Ecchymosis had extended along the posterior aspect of the thigh, above the situation of the external incision, thickening and hardening the integument and subjacent structures—not, however, so as to interfere with the operation. Being relieved from pain in the part, the patient slept well, and was altogether better on the following day. The support of generous diet and wine required by his state of great weakness agreed well; and the healing process was completed quickly, without any unfavourable occurrence.

Examination of the Limb.—The muscles of the calf were lacerated and bruised to an extraordinary degree, the fleshy masses of the gastrocnemius being very nearly severed about the middle of the muscle. The soft parts covering the upper third of the fibula were in a similar condition. This bone had been fractured tranversely, close to its articulation with the tibia; and the sharp edge of the fracture, driven violently against the tibia, had cut across the anterior tibial artery just at its passage through the interosseous ligament.

The posterior tibial vein was partially wounded about the middle of the leg; and there was a coagulum in the orifice. Under the calf and among the injured muscles there was a large accumulation of coagula.

The pulsation of both tibial arteries was felt in this case during the first two days that the patient was in the hospital, but not afterwards. This difference probably arose from the gradual extension of swelling to the foot, the pulse in these vessels having been very feeble previously. The free anastomosis between the anterior and posterior tibial arteries accounts sufficiently for the pulse of the former having been felt on the back of the foot, although the trunk had been completely divided in the leg. We know that pulsation has sometimes returned, through the medium of the collateral circulation, in the sac of a popliteal aneurism, after the femoral artery had been tied. We naturally examine the state of pulsation in the arteries of an extremity when the trunk from which they proceed is supposed to have been wounded. That the continuance of pulsation does not prove that the trunk has not been wounded, is clear from this case, and was shown still more decidedly in one instance observed by Mr. Paget in this hospital. A youth was brought in with an open wound near the middle of the thigh, inflicted a few days before, and attended with profuse bleeding. The femoral trunk beyond the wound, the anterior and posterior tibial arteries pulsated naturally. The return of arterial bleeding on the twenty-first day made it necessary to expose the femoral artery, in which a longitudinal wound was found, not less than one-third of an inch in length.

As the posterior tibial vein was wounded in the case of Connor, the effused blood under the calf probably proceeded from that vessel; for the wound of the anterior tibial artery was towards the front of the limb, while the posterior tibial vessels and nerve were undisturbed in their position behind, so that it was necessary to raise them laterally, in order to trace out the seat of injury. In a patient brought into the hospital under the care of Mr. Stanley, the leg had been seriously damaged by the wheel of a carriage passing over it. There was great swelling, and the case was regarded as severe bruising, with ecchymosis. After some time, inflammation came on and extended, and the patient died. Rupture of the posterior tibial vein was found, with great extravasation under the calf.—*Med. Times and Gazette, June* 11, 1853, *p.* 591.

75.—CASE OF ANEURISM OF EXTERNAL ILIAC CURED BY GALVANO-PUNCTURE.

By Edmund U. Eyre, Esq., H.E.I.C.S.

[The patient, a Sergeant in the Madras Fusiliers, had for some days felt an uneasy sensation in the left groin, extending down the thigh, which soon became much swollen, and in a few days a tumour was discovered, the size of a fowl's egg, in this situation. From the 2nd August, 1852, to the 4th September, the case remained much the same. Signorini's tourniquet had been applied to the tumour, and month after month passed without any change. Under these circumstances, there was considerable discussion as to what should be done. He could not remain longer a burden to the state, and no attempt at radical cure was justifiable. Mr. Eyre proceeds:]

I had met with a few cases recorded, where galvano-puncturation was successfully resorted to. It was either in aneurism of small vessels, such as the temporal, or where compression of the vessels above could be maintained; indeed, the arrest of the circulation to some degree above the aneurismal sac was regarded as essential. In this case, owing to the situation, it was impossible to effect it; nevertheless I thought, under the circumstances of the case, it was warrantable to give galvano-puncturation a trial; and on the 4th September two long fine needles were introduced an inch within the sac, each being connected with the wires of a galvano-magnetic machine. The object was to avoid shocks, and merely pass a current through the sac. Pressure, as firm as could be borne, was made above, but it was insufficient to stop pulsation in the tumour. The sensible effect produced was, pain in the groin and violent agitation of the whole body. At the expiration of twenty minutes the needles were withdrawn. The tumour was pulsating as before. Strict quietude was enjoined. For three days after neither did the aneurismal tumour nor his general health give indications that any effect had been produced. On the 8th it is noted, "Tumour painful; is in a nervous and depressed state; cannot sleep." This condition passed off, and nothing presented worthy of notice till the 12th, when pain in the tumour recurred, and he was again in a nervous restless state. Leeches were applied to the groin, and sedatives administered.

[On Sept. 16th there was much constitutional disturbance, with violent inflammation around the hip. Combated by purgatives and refrigerants. On the 19th the inflammation was subdued. The tumour was larger, but pulsation not so strong. Digitalis and morphia prescribed.]

27th. Tumour sensibly harder, and pulsation fainter.

October 6th. Pulsation to-day is very faint.

8th. Pulsation hardly to be felt.

11th. No pulsation for the last three days; the tumour is hard and diminishing; no pulsation can be heard by the stethoscope for two inches above or below the sac.

20th. No return of pulsation, and the tumour is gradually lessening; limb but little longer than the opposite one; has lost the numbness so long felt in it, and only complains of want of power to walk.

It is unnecessary to continue further extracts from the journal. From the date last recorded to the present, January 4th, 1853, Sergeant H—— has been making good progress in walking.

The remains of the aneurismal sac feels like an enlarged inguinal gland, about the size of a nut. There is œdema of the leg still.

In the cases whose treatment by galvano-puncturation led me to try it in Sergeant H——, the cure was effected by a continuous current of electricity, producing coagulation of the blood in the sac. One may infer this, by the rapid effect, from a case of subclavian aneurism: "The tumour was felt to be becoming gradually solidified; and before the withdrawal of the needles, it had become perfectly solid, and pulsation was no longer felt in it." In another case of popliteal aneurism, a like rapid effect was not obtained (attributed to the agitation of the patient); still, in twenty-four hours pulsation ceased, and in seven days he left the hospital, walking quite well. This was not the *modus operandi* in the sergeant's case, but inflammation and deposit of lymph, which filled up the sac. This mode is a hazardous one, and was not *intentionally induced*. The galvanic effect was probably too violent to produce the

former, though the machine—an electro-magnetic coil one—was used at its lowest power. I thought at first too little had been done; but when I found the external sign of the inflammation going on within the sac, accompanied by much constitutional disturbance, I began to fear that too much had been done. I watched with solicitude for the dark spot on the tumour, the forerunner of sloughing. Happily, the threatened danger passed away. The patient was of sound constitution; he lay in a spacious, well ventilated ward, and the season was favourable; under opposite circumstances the event might not have been so propitious. Notwithstanding the medical cure effected in this case, I should reluctantly resort to it again for aneurism of the external iliac, unless I had the electric power under command; but still, a successful case by such means may not be without its value in the records of surgery.—*Lancet, July* 30, 1853, *p.* 94.

76.—ON THE INJECTION OF A CONCENTRATED SOLUTION OF PERCHLORIDE IRON INTO ANEURISMAL TUMOURS. TO OBTAIN COAGULATION OF THE BLOOD BOTH IN THE ARTERY AND THE SAC.

M. Pravaz, of Lyons, the original inventor of the treatment of aneurisms by electro-puncture, has just made public, through his friend M. Lallemand, a new method of obliterating arteries and aneurismal sacs by the injection of a concentrated solution of perchloride of iron. This plan of treatment has been brought before the Academy of Sciences of Paris and the Surgical Society, and has met with a very warm approval, as several successful cases have now been published. One of these refers to a varicose aneurism at the bend of the elbow, another to a popliteal aneurism, and a third to an aneurism of the superior orbital artery. It would seem that a very few drops of the concentrated solution are sufficient to bring on coagulation, as has been ascertained by numerous experiments. The practice is well worth trying in this country, as M. Lallemand fondly hopes that the perchloride will eventually supersede the ligature. It is strange that, in the speeches and discussions on this subject, the method of compression so successfully carried out in Ireland is hardly mentioned.

The preparation of the solution has been made public by M. Burin de Buisson, pharmacien, of Lyons, and is described as follows:—Take of sulphate of iron of commerce (emerald colour), two pounds; water, six pounds; pure iron filings, the fifth part of a pound; sulphuric acid, half an ounce: put the whole into an enamelled cast-iron vessel and leave the latter upon the sand-bath until gas is no longer given off; filter, add to the fluid half a pound of liquid hydro-sulphuric acid, and allow to rest for twelve hours. Put, after that time, the solution upon the fire, boil for half an hour, and filter. To the filtered liquid add six ounces and a half of pure concentrated sulphuric acid; and place the mixture into an enamelled cast-iron vessel, which should be but half filled. Boil, and add, in small quantities, pure nitric acid, until it causes no longer the escape of red fumes. Remove the vessel from the fire, add to the fluid twenty-five or thirty times its weight of cold water, and the whole of the iron will be precipitated in the state of peroxide by the addition of a slight excess of ammonia. Wash the precipitate by decantation with pure water a great many times, and dry it in the air by spreading it in thin layers upon linen.

This dry and pulverized oxide is then calcined to redness in a large and shallow iron vessel, so that the temperature may not rise too high. This is the martial saffron of the shops, which is, in fact, pure peroxide of iron when prepared as above.

The perchloride of iron is then obtained in the following manner:—Take of the peroxide of iron, resulting from the process just described, six ounces and a half; pure and white hydro-chloric acid, two pounds; mix and allow the action to go on without fire for five or six hours; then put the vessel on a water-bath, and boil until the almost complete solution of the oxide is obtained; this should be done in a porcelain capsule, weighed beforehand. The liquid is decanted to separate the undissolved oxide, and the former is carefully evaporated upon the water-bath, constantly stirring, to the consistency of thick syrup, which is then weighed. Half this weight of distilled water is then added, the heat is kept up for a few moments, and the

whole is thrown on the filter. The capsule and the filter should now be washed with a quantity of water, equal to that used in the last place, and to the first fluid obtained, as much of the second is added to get a mixture of the density of from 43·5 to 44 degrees.

By proceeding in this manner a very limpid fluid is obtained, with a slight acid reaction, but perfectly pure, having reached the maximum of saturation, and always identical. It may be kept without any of the salt being thrown down, provided the bottle be well stopped; the colour is dark-brown when the liquid is looked at in full, and of a greenish-gold colour when held to the light, or seen in a thin stratum. Five or six drops of this fluid, mixed with the white of an egg diluted with six drachms of water, are sufficient to coagulate the whole into a mass in the space of fifteen seconds. This mass firmly adheres to the bottom of the glass when the latter is turned up, and takes a pretty long time before it slowly drops, when the watery parts begin to run off, as the serum separates from coagulated blood.

At the meeting of the Surgical Society of Paris, held May 4, 1853, M. Debout presented the two carotids of a horse, into which perchloride of iron had been injected. In one of these vessels, for the distance of two inches, the artery being held by the fingers above and below, only six drops of the perchloride had been thrown. The clot formed had, however, been re-dissolved by the current of blood, and carried into the torrent of the circulation. The lining membrane of this vessel was healthy, except a small spot where an abscess was about to form. In the other carotid fifteen drops of the perchloride had been injected for two inches and a half of its length, the upper and lower part of this length of artery being also compressed by the fingers. This vessel remained plugged all the time the animal lived. On a post-mortem examination, the whole length of the clot was found adherent to the parietes of the artery, the lining membrane being the seat of suppurative inflammation. The vessel was quite obliterated both above and below in consequence of adhesive inflammation.

In a subsequent meeting, M. Debout gave a minute description both of the experiment and of the post-mortem appearance, and concluded that M. Pravaz, the discoverer of this property of the perchloride, was right in advising injections of very small doses. M. Debout very properly added, that compression of the artery above the sac (as proposed and carried out by Dr. Bellingham, of Dublin) should be resorted to as an adjuvant of the injection, as there is a tendency in the blood remaining free in the artery to break down the clot formed by the perchloride. The author of the paper mentioned a case of aneurism at the bend of the elbow, following venesection, in the sac of which coagulation was obtained by a continuous galvanic current; compression of the vessel was neglected, and a week after the formation of the clot the latter was destroyed and washed away by the force of the arterial circulation. —*Lancet, June* 18, 1853, *p.* 561.

77.—*False Aneurism of the Posterior Tibial Artery, from a Wound, &c.* By Wm. Adams, Esq.—The injection of perchloride of iron caused coagulation of the blood in the spurious aneurismal sac, produced by division of the posterior tibial artery in a child aged four weeks. The firm clot squeezed out the serum, which was seen oozing from the surface of the wound. The instrument used for injection was a glass syringe, with a long and slender tube, which was made to penetrate the clot, and convey the perchloride to the fluid blood below.—*Med. Times and Gazette, July* 30, 1853, *p.* 124.

78.—*New Instrument for Injecting the Perchloride of Iron in cases of Nævus, &c.*—[In several cases in which this remedy had been employed in cases of nævus, two circumstances proved unfavourable to its success. In the first place, by its being in some too freely used, inflammation and sloughing had been produced; and, in the second, the flow of blood had prevented the defective instrument acting efficiently. To remedy this latter defect, Mr. Fergusson has invented the following.]

It consists of a very small glass syringe, the point of which terminates in a fine

platinum tube. This tube is encased in another one, about a quarter of an inch longer than the first, ending in a sharp trocar-like point, and having, near its extremity, an oblique opening in one side. By rotating the outer tube on the contained one, their apertures may be made to correspond or otherwise, at the will of the operator. Thus, then, the necessity for two instruments is quite done away with. The syringe having been charged, the operator rotates the outer tube, so as to conceal the orifice of the inner one entirely, and protect it from the ingress of blood. In this state the instrument is passed into the centre of the tumour, and, having been stirred about as much as may be thought desirable, the tube is turned back so as to expose the orifice; and the piston being at the same moment depressed, a drop or two of the solution is squeezed out. It may be supposed that the smallness of the whole instrument, and the diminutive size and oblique position of its aperture, will afford considerable guarantee against the injection of too large a quantity, while on its advantages, in case of employment, it is scarcely necessary to insist.—*Med. Times and Gazette, Aug.* 27, 1853, *p.* 219.

79.—CURE OF AN ANEURISM OF THE SUBCLAVIAN ARTERY, BY MEANS OF THE EXTERNAL APPLICATION OF THE CHLORIDE OF ZINC.

By M. Bonnet, Lyons.

M. Bonnet announces the complete cure of a patient suffering from subclavian aneurism, seen by M. Lallemand upon the 14th day of treatment of the disease, by successive applications of the paste of chloride of zinc. The chloride of zinc, penetrating by imbibition into the deeper parts of the tumour, produced complete coagulation of the blood, which was detached from the walls of the aneurismal cavity without any hemorrhage. The patient quitted the hospital three months and a half from the commencement of the treatment. He could at that time take a walk for half an hour at a time, and presented, as the only trace of his disease, a superficial ulceration, which was nearly healed. The clot, which came away with the eschar, was forwarded to M. Lallemand by M. Bonnet.

The patient, aged 25, had received in the left supra-clavicular region a blow with a knife, which, dividing the whole brachial plexus, and touching either the subclavian artery or one of its branches, was followed by profuse hemorrhage, and subsequently by the formation of an enormous aneurism. The rapid enlargement of the tumour, and the frequent discharge of blood from the wound, threatened the life of the patient, and rendered immediate assistance necessary. The application of a ligature between the inner border of the scaleni muscles and the aorta was rejected by both M. Bonnet and his colleagues, as too dangerous and too difficult. The galvano-puncture was also negatived, because it was impossible to suspend, even for a moment, the pulsations and the *bruit de souffle* in the aneurismal pouch. The injections of the perchloride of iron were not then known (January 2); and, possibly, the enormous size of the aneurism, its proximity to the heart, and the impossibility of compressing the artery which conveyed the blood to it, would have counter-indicated its employment. In this difficult position, M. Bonnet determined upon cauterization by the paste of chloride of zinc.

The first eschar was produced in the centre of the tumour. Every two or three days, Bonnet removed, with a bistoury, the superficial layers of the slough, and for five weeks he continued a series of applications of the paste, which penetrated daily both in depth and extent. Upon the 14th day, the pulsations of the *bruit de souffle* ceased; at the end of the second month, the eschar began to detach itself without any hemorrhage. The clot came away with the eschar. Bonnet affirms that modern authors are wrong in attributing this method of treatment to Ambrose Père, Guattani, or Marcus Aurelius Severinus; in none of the original works is it mentioned. The ancients knew nothing of the chloride of zinc, which was introduced into practice by M. Canquoin.

Bonnet first thought of employing this escharotic in the treatment of aneurism, by observing for the last ten years its power in coagulating blood and arresting hemorrhage. He found, 1837, that it got rid of varicose veins without the occurrence of

bleeding which frequently ensued after the application of potassa fusa. Both he and his colleagues—MM. Barrier, Bouchacourt, Desgranges, and Vallet—have often taken a firm coagulum from vessels exposed to its influence. He has seen it entirely remove hemorrhoids, varicoceles, and erectile tumours, by penetrating into the vessels by imbibition, coagulating the blood, and rendering the whole tumour firm. That it arrests arterial as well as venous hemorrhage, was shown by its action upon goitre, as stated by M. Philipeaux, in a memoir founded upon some of Bonnet's clinical lectures.

The eschar separates about eight days after the application of the paste; it can, therefore, be easily retained by successive applications for a month, or even longer.

MM. Bonnet and Gensoul have lately proved that the chloride of zinc may cure the disease known as aneurism by anastomosis. A tumour, occupying the summit of the head, an inch in thickness, and of rounded surface, about half a foot in diameter (15 centimetres), consisted of an immense number of anastomosing arteries, pulsating with a loud *bruit de souffle*, and nourished by seven large trunks coming from the frontal, the temporal, and the occipital region, each about the size of the brachial artery. Injection was inefficient and impossible; pressure, continued for a year, failed, and the surgeons were talking of tying the two carotid arteries. The cauterization by the paste of the chloride of zinc effected the separation of the tumour without any hemorrhage whatever, from each of the nutritious arteries. The result of the case, not yet complete, is to be communicated at a future meeting of the Society.—*Med. Times and Gazette, July* 23, 1853, *p.* 98.

80.—CASE OF ERECTILE TUMOUR OF THE ORBIT.

By Dr. Daniel Brainard, Professor of Surgery in Rush Medical College, Chicago, Illinois.

[On August 1st, 1851, the patient, a farmer, first consulted Dr. Brainard for a tumour of the left orbit, possessing all the aneurismal characteristics. He supposed it to arise from a severe kick from a horse, fracturing the lower jaw. The tying of the common carotid was proposed, but he declined, until the 11th of November, when it was performed in the usual manner. Bags of pounded ice and salt applied to the orbit relieved the acute sensibility of the part. The tumour gradually diminished in size, though a thrill could still be felt.]

On the 11th November, 1852, just one year from the first operation, he returned to me. At this time the entire orbit was filled, the lower lid was concealed by the fungous projection, the eye pressed outwards and downwards, and at the root of the nose and inner part of the superciliary ridge there was an elastic swelling, which had caused the absorption of the bone. It was at that point that the pulsations were strongest and the thrill most distinct. The small vessels of the forehead and side of the nose were greatly enlarged, pulsated strongly, and the latter gave the peculiar thrill of the disease very sensibly. His general health was much impaired, and he had been able to come to the city by railroad only with great difficulty.

The question of the proper treatment to be employed in a case of erectile tumour of the orbit, when the ligature of one carotid has failed to effect a cure, is one of some difficulty. The attention is naturally turned to the other carotid; but even if the ligature of that were likely to succeed, the risk in this case was too great, since it was found that compression of it for a few seconds rendered him perfectly insensible. None of the means resorted to for the purpose of obliterating this vascular tissue had ever been tried on deeply-seated tumours, like those of the orbit. On carefully reviewing them all, it was determined to try puncture with hot needles. This was done first on Nov. 13th, 1852; the needle used was of the size of a common knitting-needle, sharpened to a triangular point and set in a handle of bone. After being heated in the flame of an alcohol lamp, it was plunged into the tumour about an inch from the root of the nose, in the course of the superciliary ridge, and carried downward and backward to a depth of over three inches; on withdrawing it, some bleeding followed, which was readily stopped by slight pressure. For two days there was little pain or swelling; but on the third day the inflammation was acute, the swelling extending over the face, and presenting an erysipelatous appearance. On the fifth day this began to decline, and in a week was nearly gone.

While the inflammation was at its height the tumour was more firm and the thrill less distinct, but as it subsided the elasticity and pulsation rapidly returned.

Nov. 25th I repeated the operation, making the puncture half an inch nearer the nose, and carrying it to a depth of only one inch. The effects corresponded with those before described, but were a little less violent. On the third day the sound was diminished, and the firmness of the tumour very sensibly increased. On a careful examination it was found that the morbid tissue extended over the bridge of the nose and down to the inner canthus of the right eye, where a thrill could be distinctly felt.

Dec. 2nd. A puncture was made on the left side of the bridge of the nose, the needle being carried obliquely upward and to the left side. The inflammation resulting from this puncture was acute, and a superficial suppuration occurred about it. The thrill upon the right side of the nose quite disappeared.

The effect of these three punctures was to limit the spread of the tissue upon the forehead and nose; but the inflammation, although acute and extensive, was superficial, and the mass of the disease at the centre was still unaffected. It was evident that the needles cooled in passing through the tissues, so as not to cauterize much below the surface.

It was therefore determined to change the treatment, and inject a fluid into the centre of the tumour capable of effecting its obliteration. For this purpose a solution of the lactate of iron, of the strength of eight grains to one fluid drachm of distilled water, filtered through paper, was preferred. The reasons for believing in the safety and efficiency of this remedy will be given below.

14th. I punctured the tumour at its most prominent part with the infiltrating canula, carrying it to the depth of about an inch; on withdrawing the stilet arterial blood followed. A fluid drachm of the above-named solution was immediately thrown in with a small syringe, constructed for the purpose, and the canula withdrawn. The immediate effect was an intense pain in the left temporal region and a flushing of the face, which latter only lasted a few seconds. A chill followed, accompanied with nausea and vomiting. Reaction took place in an hour, but the vomiting continued, and for twenty-four hours all drinks were ejected; pulse 63.

15th. Vomiting continues; pain less; upper lid much swollen; pulse 65.

16th. Vomiting less; no pain; has slept well; pulse 60; swelling increased, and so tender as not to bear the slightest touch.

23rd. For the last six days the vomiting has gradually diminished; the pulse is natural; the tumour is less tender, firm, and the pulsation perceived only at the external angle; frequent lancinating pain is felt in the orbit.

During the whole of this treatment, both of punctures and infiltration, the head has been kept enveloped in bladders filled with a freezing mixture of pounded ice and salt, which was very grateful to the patient. He now began to complain of its being too cold. The heat in the head was reduced to a natural standard, and from the time of the infiltration neither thrill nor sound has been perceived. The veins of the face were much diminished in size, and the pulsation of the arteries reduced to its natural state. A slight pulsation was still perceptible at the external angle of the eye, for which a puncture was made at that point with a hot needle, on January 4th, 1853.

Jan. 10th. From the time of the last puncture no pulsation has been perceived, the swelling subsiding. At this time an opening was found to exist on the anterior surface of the globe of the eye, which still remains protruded between the lids. This was followed by severe inflammation of the globe, which lasted several days. The discharge from the opening was at first the humours of the eye, afterwards pus, but no blood.

Feb. 5th. Swelling gradually subsiding; tumour firm, no pulsation; but little pain. The patient slept for the first time for more than a year without some one to keep wet cloths upon the eye, dressed himself, and walked about the house; health good.

March 5th. Swelling entirely disappeared; the globe of the eye perfectly collapsed; lids closed.

June 6th. The patient has been pursuing his ordinary occupation for three months; his health appears perfectly restored. The left orbit seems entirely excavated and free from disease.

At this time he was presented at the annual meeting of the Illinois State Medical Society, and examined by a large number of its members, who concurred in the opinion that the case might be regarded as perfect.

Remarks.—It will readily be understood that so serious an operation as throwing a fluid ounce of a solution of the lactate of iron, at a point almost to saturation, directly into the current of the circulation, would not be ventured upon without the most satisfactory reasons for regarding it, firstly, as safe; secondly, as effectual. I propose now to offer briefly some of the reasons for so regarding it.

In 1850 I was engaged in making inquiries concerning the effects of this salt in certain diseased states of the system, and was induced, from theoretical views, to try the effect when thrown into the veins. Before doing this upon a human subject, I tried it upon a dog, dissolving, rather imperfectly, ten grains of it in one fluid ounce of distilled water. This was thrown at once into the saphena vein of a middle-sized dog, and the experiment was twice repeated without any ill effect.

In December, 1851, I first used it upon the human subject, using in the course of eight weeks nineteen grains of the salt in solution. The largest amount injected at one time was three grains, dissolved in three drachms of distilled water. The number of times it was employed in this subject was nine. It had no ill effects, but the contrary, what is pertinent to our present subject is, that each of the veins into which it was thrown at the bend of the arm was found after a certain length of time to be obliterated and converted into a firm cord, without there being produced either pain or perceptible inflammation. I have since used it in four other cases,—in two of them once, and in the other two twice each,—without any unfavourable effects. In one of these cases in which it was used twice a vein was opened a second time, three days after the first operation, but it was found filled at that point with coagulum, which of course was not disturbed, but the injection made by another vein. Its tendency to obliterate the veins by a gradual process of thickening the coats and obstructing the circulation, was thus made sufficiently apparent, while its safety, used with requisite precautions, was clearly demonstrated. As these cases related solely to the veins, before using it in the case of tumour of the orbit, in which it might enter directly into the arterial circulation, it was thought proper to try it upon an artery in a dog. Accordingly three grains of the lactate dissolved in three fluid drachms of distilled water, were thrown into the carotid artery of a small dog, and the vessel tied. The only effect was a slight irregularity of the action of the heart, which continued but a few seconds. As this entered directly into the cerebral circulation, its safety when used in much smaller quantity in the human subject might legitimately be inferred. The result, as used upon the tumour, fully justified its employment, although the effects produced were somewhat severe. They were greatly less so, and less dangerous, than those resulting from the ligature of the carotid artery; and used in smaller quantity, repeated if necessary, it seems to promise relief without the necessity of resorting to that operation.

I may add here, that I have since used the same solution upon an erectile tumour of a venous character, of the size of a pigeon's egg, upon the inside of the lower lip, by injecting it at three different times, without any other effect than a slight tenderness, followed by gradual diminution of size and induration of tissue; but the cure is not yet complete.

The applicability of this practice to the treatment of varicose veins and aneurisms will readily suggest itself, but further experiments will be required to determine to what extent it can be relied upon in these cases. The number of the Revue Medico-Chirurgicale de Paris for May, 1853, contains some experiments by M. Pravaz, M. Giraldes, and M. Debout, on the coagulation of the blood in the arteries of animals by the injection of the solution of perchloride of iron, and also three cases in which it had been used for the treatment of vascular tumour in the human subject, in each of which suppuration, and in one gangrene, followed. These results are not of a nature to encourage further trials of that substance; but if we take into consideration that the solution of the perchloride of iron is a substance foreign to the normal constitution of the blood, and produces instant coagulation when brought in contact with it, whereas the solution of lactate of iron is composed of elements which enter into the composition of the blood; that when thrown into the living vessels it does not coagulate it, but produces a thickening of the coats and a deposition of coagu*lable lymph from* subacute inflammation; the difference between the two results

will be readily understood. It is probable that the solution of the lactate, when thrown into the vessels, immediately undergoes decomposition, the acid combining with the soda of the blood, and the base passing into a higher state of oxidation in which it naturally exists in that fluid. In no case has this solution, when thrown into the blood or into a vascular tumour, shown a tendency to produce suppuration, but in slow inflammation of an adhesive kind and limited extent. In one case, where it was inadvertently pressed in small quantity into the subcutaneous cellular tissue, instead of into the vein as intended, a hard swelling having all the appearance of a boil or small carbuncle was the result; but even this effect will not be produced by it, when used in that manner, unless the solution be in a certain degree concentrated.—*Lancet, August* 20, 1853, *p.* 162.

ORGANS OF RESPIRATION.

81.—SYPHILITIC ULCERATION OF THE FAUCES AND LARYNX; TRACHEOTOMY.

Under the care of JOHN HILTON, Esq., F.R.S.

[The importance and value of the operation of tracheotomy in imminent cases need not be insisted upon, but it rarely happens that we meet with a case where an artificial larynx was required for so long a period as in the following one. We owe the details of the case to the kindness of Mr. Stevens, who has watched the case now for a period of some years.]

Sarah C——, 28 years of age, and unmarried, whose habits of life have been very irregular, was admitted into Guy's Hospital, June 16, 1847. The patient had been in the hospital one year before admission, when she suffered from severe secondary ulceration of the uvula and soft palate. She remained in the hospital for a week at that period, the treatment adopted being quinine, and the application of nitrate of silver to the ulcers of the throat.

When admitted, on July 16, 1847, as stated above, her person and symptoms were described as follows:—The patient is a sallow, ill-conditioned looking woman, small, and uncleanly, with a countenance expressive of great anxiety. Since she left the hospital (a twelvemonth before this description was written) she has never been well, her mode of life has been very irregular, and she has frequently caught cold. The edge of what remains of the soft palate is swollen and ulcerated, as is also the left tonsil; the throat generally is inflamed, and the epiglottis very irregular in its outline. The breathing is stridulous, 13 per minute; pulse 84, thready; skin cool and moist; tongue pale and white. Mr. Hilton believes the disease to be situated in the arytenoid cartilages. Donovan's solution, in decoction of bark, was prescribed, with morphia at night, and a blister over the larynx.

For the next five days the breathing became more and more difficult, though the patient sedulously used the vapour of hot water to the throat. The peril soon became so imminent that Mr. Hilton performed tracheotomy five days after admission.

An incision, an inch in length, was made as near the middle line as possible, and a conical curved trocar and canula thrust into the trachea about one inch and a half above the sternum. The trocar was then withdrawn, and, to prevent the canula from slipping, it was tied round the neck by a tape. The operation was rendered somewhat difficult by the head of the patient being forcibly thrown forward on the chest.

Immediately after the opening of the trachea the dyspnœa was extreme, but in about an hour the woman became tranquil, and slept comfortably at intervals during the night. She was ordered wine and beef-tea. For five days after the operation the woman suffered considerable pain in the head and in the wound; several times she was almost choked by the cough and accumulation of mucus in the tube; but on the fifth day the pain abated considerably, and the respiration became easier. She experienced great relief by inhaling the steam from an infusion of conium.

The patient continued taking about six ounces of wine per diem, and on the

eleventh day after the operation, the report states that she slept well, the respirations were only twenty in a minute, and the pulse 104, soft. Mr. Hilton then ordered quinine, and good diet, with a continuance of the wine.

On July 11th, twenty-one days after tracheotomy, she began walking about the ward without fatigue, and was pronounced convalescent. Her progress from this time was most satisfactory; she gradually lost the sallow, unhealthy hue of skin, and gained flesh rapidly; the wound contracted firmly around the canula, the latter requiring, however, occasional cleansing. No topical applications were used to the palate and larynx, but the ulcerations did not extend; they gradually assumed a healthier appearance, and about three weeks after the operation the throat was quite well.

With Mr. Hilton it was a question as to the propriety of removing the original canula, and substituting a broad one; but on considering the subject, as there was a probability of much inconvenience resulting from the change, it was decided that the canula should remain untouched. By the patient's own desire she was discharged on Aug. 10, 1847, seven weeks after the operation, and was earnestly enjoined to be careful of exposure to cold, and to wear constantly two or more folds of muslin over the mouth of the canula.

This patient stayed away for about six years, when she was re-admitted May 12, 1853, for a slight bronchial affection, much emaciated, and suffering more from want than from actual disease. She was still wearing her canula, and Mr. Stevens, who had been attending to her for a long time at her residence, was kind enough to put the following memoranda at our disposal:—

"Since the period that this patient left the hospital in 1847 to the present time, I have constantly seen her. She has been living in Spitalfields, and has had three children since the operation was performed. Her husband has frequently during these years been out of work for days, sometimes for weeks, together, so that her living, at the best of times hardly sufficient, has very often been totally inadequate, and she has consequently endured much privation. Her different places of residence in Spitalfields have all been characterized by darkness, dirt, and utter cheerlessness; she has been exposed continuously to all the vicissitudes of the weather (to some extent perhaps unavoidably), her clothing being inappropriate and insufficient, and she has moreover entirely disregarded all our entreaties and injunctions relative to the tube being lightly covered with a fold or two of muslin; frequent and sometimes rather severe attacks of bronchitis have been the result of this imprudence and carelessness.

"The tube has required removal and cleansing four or five times in the year, of course oftener when there has been bronchial disturbance present; the secretion has at all times passed freely and easily *through the canula*, and never through the mouth. Carefully repeated trials have failed to detect the smallest passage of air through the larynx and mouth till about four months ago, when a very slight stream was found to pass, so small that even now (June, 1853) it is only sufficient *to bend* the flame of a candle. There has been no appreciable voice, and it requires the greatest possible attention in observing the movements of the lips to be enabled to recognise the enunciation of a word. Further to demonstrate the impervious condition of the larynx, I may mention that when the finger has been applied over the end of the canula, or, the canula being absent, over the external orifice, complete incapability of breathing has been the result.

"Generally speaking, I have had no difficulty in removing the canula, and substituting another, during the cleansing of the original one. On the last occasion, however, Feb. 23, 1853, there was great difficulty in the re-introduction of the tube, owing to a very relaxed state of the tracheal mucous membrane, and towards the close of this nearly fatal operation, I was compelled to use considerable force to overcome the sphincter-like contraction of the external orifice. On three or four occasions, small abscesses have formed in front, but independent, of the trachea, and these have occurred more often *below* than above the canula.

"The form of tracheal tube through which this patient has breathed for six years is here introduced, for the purpose of adducing the strongest evidence of its aptitude as regards the purpose for which it was intended. It should be also noticed that it is a curve through which a trocar can be introduced with facility; indeed the tube here represented *is the very one* which was employed with the trocar at the time of operation, and has been used by the patient during at least four years out of the six."

Mr. Hilton treated this patient, upon her re-admission, on the tonic and restorative plan, and she left the hospital in a month, greatly improved, and in what might be considered, for her, good health. It is thus clear that a canula can be worn for years under the most unfavourable circumstances, and it is also evident that this patient could not have lived without the performance of the operation, seeing that the larynx is now almost completely closed. This case might also allay the fears of those who advocate tracheotomy in epilepsy, as it is proved that a canula can be worn without danger for a considerable length of time.—*Lancet, July* 16, 1853, *p.* 57.

82.—ON TRACHEOTOMY ABOVE THE THYROID ISTHMUS, ILLUSTRATED BY A CASE.

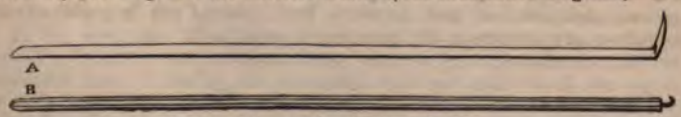
By Dr. Charles Edwards, A.B., Cheltenham.

The space operated in, which I shall term subcricoid, is bounded above by the cricoid cartilage, and below by the isthmus of the cricoid thyroid gland. It is about one-fourth of an inch in extent. Ink a line precisely over this space, and draw it up over the thyroid cartilage, upon which incise the retracted integuments; you thus obtain a strictly rectilinear and median incision.

Next, get clearly the cricoid cartilage and a ring of trachea below; take now a steel director grooved throughout, one extremity of which passes off from the open groove, with a short tenaculum curve, as figured in the diagram; pass this curve beneath the lower margin of the cricoid cartilage, and hook the latter well forward and upwards, in this way, rather than by "pressing the larynx" as advised by Mr. Maclise, steadying the trachea.

Now pass into the groove of director the point of a strong narrow scalpel, which thus cannot slip to either side during any convulsive movements of the trachea, but immediately pierces it, thus rendered tense. Should the thyroid isthmus or any pulsating vessel be in the way below, the puncture should barely admit the extremity of a probe-pointed bistoury, in which case introduce the bistoury on the grooved tenaculum into the trachea with its back to the cricoid cartilage, and in a subcutaneous fashion you can divide as many rings of the trachea from within outwards, underneath the isthmus, as may be necessary to admit the tracheal tube without carrying it so far forward as to wound the isthmus, or even drawing it down. The introduction of the tube in this limited space will be much facilitated by the same directing and fixing tenaculum, and the distension of the more superficial parts, by its introduction, will prevent a drop of blood entering the trachea.

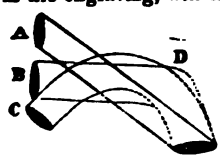
Finally, with respect to the shape of the canula, it is well apprehended that a straight tube will press and irritate the posterior wall of the trachea; but I would here especially observe that curved tubes, if short, are easily displaced by coughing, &c.; or else secured by a ligature so tight round the neck as to obstruct the cervical circulation. If sufficiently long to be retained by moderate fastening, they alike objectionably press against the anterior wall. (See illustrative diagram.) A further



A. Lateral view of directing tenaculum.
B. Posterior view of ditto, showing the groove.

objection, common to both the straight and ordinarily curved, is, that from the position of their extremities against the tracheal parietes, neither air nor mucus can freely pass through either tube.

All these difficulties may be met by using an elbow-shaped, obtuse-angled tube, the angle being at the juncture of the upper with the middle third, which, as shown in the engraving, will simply lie in the axis of the trachea.



B A. Straight canula.
E D C. Curved tube.
E D B. My obtuse angled ditto.

I will now subjoin my case of operation, so far as it has gone, trusting that the above practical points may be useful to parties called, as I was, to operate without a moment's warning.

On Sunday night, at nine p.m., Mr. Groves, a respectable tradesman, had a rapid succession of epileptic fits up to eleven o'clock; had, it appears, been left by his then medical attendant. At eleven I was summoned to take charge of the case. The laryngismus was terrific; and he, being a Roman Catholic, now in a short comatose interval, had received the last rite of his church.

In consultation with Dr. Allendyce, after trying every possible expedient till one a.m., I proposed tracheotomy. The only question was, whether, after the measures already adopted, it was worth while to risk the character of the operation on a case so utterly hopeless. I operated by candlelight, at half-past one a.m., during a short comatose interval of regularly cumulative—shall I say culminating?—laryngismus tending to asphyxia.

For the entertainment of Dr. Radcliffe, I now enumerate the following facts:—

1st. The fits, the recurrence of which we could have predicted almost to a minute, immediately ceased. Whatever congestion might have caused them, there was no inflammation to remove them. But there was the shock of the operation! Would Dr. Radcliffe's physiology propose to the profession any operation equivalent in shock and sequelæ in any other part of the body as equally anti-epileptic? If the locality establishes the difference, that local operation—tracheotomy—is the cure.

2ndly. He was operated upon in a state of insensibility; *ergo*, the cessation of the fits was not, at least, the result of HIS FAITH.

3rdly. This case does not "prove too much," as Mr. Cane has stated, as *abortive* fits have occurred every day, except Wednesday; nor yet too little, as they stand in strange contrast with the former, continue but for a few moments, are not even trachelean, and frequently allow the patient instantly after to resume his conversation—strictly as yet, and scarcely, the *petit mal*.

4thly. Their recurrence or absence concurs so regularly with the clogging or cleansed state of the canula, that their frequency or otherwise might be almost fixed beforehand by the amount of attention to the tube. This will account for Dr. Verga's case of fistula co-existing with epilepsy. Was the fistula always fully patent? And besides, "he died of tabes;" not, then, of epileptic laryngismus!

5thly. I have had as yet no consecutive fever to control or diminish the fits. His most tranquil and cordial days have been his least fitful.

Finally, I would observe that to attribute any one thing possibly to any other thing is probably easier to some minds than to offer a theory philosophically founded, and likely to issue in the saving many lives; nay, easier than even to wait till time and experience establish or otherwise the relation of cause and effect between laryngismus—not epilepsy—and its cure by tracheotomy.

P.S. Tuesday, May 17th, 1853.—Patient has had no fit, abortive or otherwise, since Saturday evening, seven o'clock; walks abroad and follows his usual employment. In fact, since a properly patent canula has been used and kept cleaned, up till last date, May 14th, his slight epileptic abortions were gradually yielding, and since gone.—*Lancet, May* 28, 1853, p. 492.

ALIMENTARY CANAL.

83.—PERMANENT CURE OF REDUCIBLE HERNIA.

By Dr. George Haywood, Boston, Massachusetts.

[A committee appointed to inquire into this subject, after a careful examination thereof, came to the following conclusions:]

1. That there is no surgical operation at present known, which can be relied on with confidence to produce in all instances, or even in a large proportion of cases, a radical cure of reducible hernia.

2. That they regard the operation of injection by the subcutaneous method as the safest and best. This will probably in some cases produce a permanent cure, and in many others will afford great relief.

3. The compression, when properly employed, is, in the present state of our knowledge, the most likely means of effecting a radical cure in the greatest number of cases.

[In an appendix to their report, one of the committee, Dr. Mason Warren, describes an operation proposed by Dr. Pancoast for the radical cure of hernia.]

The contents of the hernial sac being returned into the abdomen, and the ring explored to ascertain that no portion of the intestine protrudes, the pad of a well-fitting truss is slipped down so as to make pressure on the inguinal canal, and prevent any escape of the hernia. With the forefinger of the left hand the spermatic cord, as it passes out from the external inguinal opening, is pressed upwards on the pelvic bone, so as to prevent it from being injured. A delicate trocar and canula, the latter having fitted to it a small Anel's syringe, is now carefully but firmly forced through the integuments with a rotatory motion to facilitate its progress, and pushed forward till it enters the external inguinal ring or neck of the sac. The trocar being now withdrawn, the canula is kept firmly in place, and twenty or thirty drops of the tincture of iodine, tincture of cantharides, or sulphuric ether, thrown in and lodged in the neck of the sac, when this is practicable, or else in the vicinity of the external abdominal ring. Subsequently to the operation, a small compress is applied over the minute wound made by the trocar, the pad of the truss slipped down over it, and the patient directed, for a week or two, to maintain the recumbent position.

In addition to the injection, in some of the operations, a tenotomy knife was previously introduced, and the internal surface of the neck of the sac scarified. The wound made by the knife in these cases much facilitated the subsequent introduction of the trocar, which is with some difficulty worked through the integuments.

In no instance did any bad result follow the operation—the pain and inconvenience hardly amounting to that presented in a case of hydrocele treated by injection, or in any simple operation.

The following case, attended with success, will serve as an illustration of the course generally pursued:—

A male child, three years of age, with congenital inguinal hernia of the right side, was brought to the Massachusetts General Hospital to obtain relief, if it was possible, as no truss had been found to retain the protruded intestine in the abdomen, and the pain and inconvenience from the infirmity was great. On examination, a tumour, the size of a small orange, was found to occupy the scrotum. By a little manipulation, the contents were ascertained to be a portion of omentum, a loop of intestine, and the testicle—the whole of which, by care, could be easily returned into the abdomen.

The question which first presented itself was, whether the testicle could be separated from the other parts, the adhesions being quite intimate between them, so as to admit the return of the intestine and omentum into the abdomen, leaving the testicle in the scrotum. This being determined, the operation was performed as follows:—The intestine and omentum being returned into the abdomen, and the testicle prevented from following, the spermatic cord was held out of the way in the manner stated above. A subcutaneous incision was then made by a cataract knife, the point of which was carried into the sac, and the neck scarified in different directions. Through the aperture thus made, a small trocar and canula were intro-

duced; the former being withdrawn, the syringe was adapted, and thirty drops of sulphuric ether were injected. The truss was now applied.

The operation was performed on October 28, 1847, and there was every prospect of success, when, from a violent paroxysm of crying, the hernia was forced down on December 9. On the 12th, the injection was repeated, and resulted, on the following day, in a swelling of the scrotum, such as is observed after the injection for hydrocele. On December 22, the report was made that the hernia came slightly down, and was returned with difficulty, "the aperture being apparently quite small." By the end of the month, it was stated that the hernia was perfectly retained.

I have been informed by an individual who saw the patient a year afterwards, that the cure was permanent.

During the treatment of this case, a slight suppuration took place under the pad of the truss, which, the patient being somewhat fractious, was necessarily applied pretty firmly to prevent the recurrence of the hernia after the operation.

In a large proportion of the other cases operated on, the patient experienced much relief, though still obliged to wear a truss. In one case, where the hernia was quite large, no relief was experienced. A female, with a double femoral hernia, on whom the scarification and injection were once or twice repeated, expressed herself much benefited by the operation, the hernia being retained, and the suffering previously experienced much relieved. Another patient, a labouring man, was seen by me six months after the operation; the rupture had not recurred, but he still wore a truss. Previous to this time he had not been able to work without forcing down the intestine under the pad, causing so much pain and ill health as to have induced him to come to Boston for relief.

Some allowance for the want of perfect success in the above operations must, of course, be made from the tentative mode in which they were performed through fear of a serious result.

From a comparatively limited experience, I derive the following conclusions:

1. That the operation, when carefully performed, is safe.

2. That in ruptures where the neck of the sac is small and the abdominal aperture not too much enlarged by repeated descents of the hernia, there is a prospect of a radical cure.

3. That, in most cases, the operation mitigates the infirmity, allowing the hernia to be more readily retained by the ordinary mechanical means.

[Dr. Samuel Parkman stated that he had seen operated upon four cases of hernia for their permanent cure.]

The first case was in January, 1848; the second and third in September, 1849; and the fourth in October, 1851. The herniæ were all inguinal. The method employed was scarification of the pillars of the ring and adjacent parts, with injection of tincture of iodine, by means of a syringe armed with a point at the nozzle. The precise situation where the fluid was thrown I believe it to be impossible to determine. It is clearly more probable that it should have been into the cellular tissue around the neck of the sac, than into the sac itself. In all the cases I compressed the canal to prevent communication with the peritoneal cavity. Rest in the horizontal position was enjoined, and a bandage applied. Some tenderness and swelling resulted in all the cases.

The first patient considered himself relieved, that is, he felt that the hernia descended with more difficulty.

The second and third cases presented no marked results.

The fourth case is worthy of note:

A healthy man, twenty-five years of age, stated that the right testicle did not descend until his tenth year, and was then followed by a hernia. This hernia had always been reducible, but the testicle was returned with it. A truss had but imperfectly retained the hernia, and he was desirous of relief if possible. On examination the ring appeared very large, and coughing or straining produced the descent of a mass the size of a goose-egg, on the front of which was the testicle, which could not be separated from the hernia proper. I proposed to retain the whole mass, and with this view, between the 29th October and 10th November, I did four separate operations, each time scarifying the pillars of the ring and injecting *tincture of iodine*. Each operation was followed by an effusion into the parts, and

on November 14, when the patient was discharged by his own request, he stated that he had a feeling of firmness in the ring which he had not previously. I have no doubt, however, that the hernia could easily have been made to descend.

The conclusion from this small experience appears to me to be—

That the operation by scarification and injection, being perfectly safe, is worthy of being practised to test the amount of its efficacy; but the fact that so many other methods, which, *à priori*, would seem more calculated to produce the same expected result, viz., the plugging the neck of the sac or ring with lymph, have not cured the disease, should suggest very great caution in the formation of an affirmative opinion from any but a large and long experience.

The operation, as practised by Dr. Wood of Cincinnati, also in my opinion offers many inducements to surgeons, to make it the subject of experiment; since, proposing as it does the *approximation* as well as agglutination of the pillars of the ring, it attempts to meet the objection that may be made against all the other methods, viz., that the tendinous opening remaining the same, but an imperfect barrier can be opposed to the re-descent of the hernia.—*Edinburgh Medical and Surgical Journal, Oct.* 1853, *p.* 353.

84.—STRANGULATED FEMORAL HERNIA—REDUCTION—SUBSEQUENT GANGRENE OF BOWEL—RECOVERY.

Under the care of E. Stanley, Esq.

[The patient, a female, aged 44, was admitted into St. Bartholomew's Hospital Dec. 29, 1852. The bowel had been strangulated eighteen hours.]

She was, on admission, in a condition of extreme prostration, with an anxious countenance and scarcely perceptible pulse. The tumour was very tense, and about the size of a goose's egg. Mr. Stanley did not deem it warrantable to again attempt the taxis, but without delay proceeded to the operation. On account of the feebleness of the pulse, chloroform was not administered. The sac of the hernia having been exposed by an incision along its inner side, and the stricture divided, ineffectual attempts were made to reduce the tumour without opening the sac, which was accordingly laid open. Together with a large mass of omentum, a strangulated knuckle of intestine, about the size of a walnut and quite black, was now brought into view. Its surface was tense, smooth and polished, and as it did not appear to be gangrenous, Mr. Stanley returned it into the abdomen, leaving the omentum in the sac to which it was adherent. The ordinary dressings having been applied, the patient was sent back to bed.

Dec. 30. She has passed a tolerably quiet night, undisturbed by vomiting, but this morning the abdomen is tender and tympanitic, and her aspect is sunken and very anxious. Pulse extremely feeble. Hirud. x. abdomini.

℞. Pil. sap. co. c. opio. gr. v. 4tis horis.

Jan. 2. The pills have been regularly continued up to the present time (eighteen grains of opium in three days), and with apparently the best effect; the symptoms of peritoneal inflammation have gradually yielded, and her strength has much improved. To-day the bowels have acted twice quite spontaneously, for the first time since the operation.

4th. The wound has not yet commenced to close; to-day there is a discharge from it of *fluid intestinal contents*. Her general health is improving; she takes a nourishing diet, with beef-tea and wine.

21st. The discharge of fæces from the wound, which continued profuse for two weeks, gradually declined, and has now quite ceased to flow, and the wound looks healthy. She has during this time had several evacuations per anum, but by far the greater part of the intestinal contents have passed through the opening in the groin.

Feb. 9. The patient is going on extremely well, and the wound is nearly closed. The bowels act regularly by the natural passage.

On March 16 the patient left the hospital quite well in every respect, the wound being healed and a truss adjusted.

Inasmuch as the space of six days elapsed before the diseased intestine gave way, and as in the interval the bowels had acted naturally, it may fairly be inferred, that, at the time of the operation, the vitality of the strangulated portion was not hope-

lessly reduced. We have noted that it was not collapsed, and that it retained its polished smooth appearance. Very possibly, had the restorative vigour of the patient been greater, the ulterior processes, which resulted in sloughing, might have been arrested, and the gut enabled to resume its functions, and taking this view the prolonged subsequent history would seem quite to justify the course pursued by Mr. Stanley. It is no light matter to needlessly puncture intestine because it is black, or even to leave it exposed in the wound,—a proceeding which will certainly increase the danger of gangrene. Looking, then, at all the various risks, and estimating fairly the various means of forming a correct prognosis, it is a thing quite to be expected, that, in some cases, the probabilities may be so nicely balanced, that the judicious surgeon may return portions of bowel, concerning which he does not feel absolutely certain that they are not irrecoverably damaged. Just such a case we believe the preceding to have been. To return gangrenous intestine is, of course, a proceeding replete with danger, on account of the probability of the escape of fæces into the peritoneal sac. If, however, time be allowed for the exertions of the *vis conservatrix naturæ* before the diseased parts separate, this accident may, as the result of the above case proves, be obviated by the preparatory glueing together of the intestine and the abdominal wall at the part nearest to the external opening, so as to provide means of free escape from the irritating fæcal matters. In addition to the above point of interest—the successful treatment of traumatic peritonitis by opium, and the spontaneous closure of an artificial anus—this case also illustrates the practice of leaving adherent omentum in the sac of the hernia. The mass left was of very considerable size, and, at the time of operation, much congested, though not in a condition at all approaching to gangrene. No sloughing occurred subsequently, but the whole sac suppurated very freely, a considerable portion of the discharge being probably derived from the exposed serous membrane. Under this process, the omental mass diminished much in size, and ultimately became consolidated with the surrounding parts.—*Med. Times and Gazette, April* 30, 1853, *p.* 446.

85.—CASES ILLUSTRATING THE USE OF CHLOROFORM IN THE TREATMENT OF HERNIA.

By W. S. Savory, Esq., Tutor at St. Bartholomew's Hospital.

[The first case is one of oblique inguinal hernia, having the following appearances:]

A tumour, about the size of a common egg, extends from the right internal ring, along the canal, into the scrotum; it is firm and tense, and conveys a slight impulse on coughing. He complains of pain when the tumour is handled, but there is no tenderness in the neighbouring parts, or in the abdomen generally. A very small swelling in this region was accidentally discovered about two months ago; it soon disappeared under pressure, but has since repeatedly returned. He has never worn a truss. The present tumour appeared about 2 a.m.; he was making no exertion at the time. Not being able to return it as usual, he applied to a medical man. He was placed in a bath, and the taxis employed for fifteen minutes without success. Under these circumstances, it was determined to remove him at once to the operating theatre, and, while under the influence of chloroform, to repeat the attempt at reduction, and if unsuccessfully, to operate without further delay. Chloroform having been freely administered, the hernia was reduced without much difficulty. In a few days he left the hospital, wearing a truss.

[The second is a case of congenital inguinal hernia in a man aged 42. It is thus described:]

A firm and tense tumour extends from the internal ring, along the spermatic cord, into the scrotum, of irregular shape, and somewhat constricted about the middle. An impulse is distinctly felt on coughing, but the tumour and the parts around appear very tender. He has "had a rupture" ever since he can remember, but has always been able to reduce it. He has never worn a truss. About four hours ago, the tumour appeared of unusual size, without any apparent exertion, and all attempts at reduction failed. He was placed in a bath (temp. 100°), and taxis employed, without success. He was then removed to bed, and placed completely under the

influence of chloroform. The taxis being repeated, in about three or four minutes the hernia was reduced, the tumour almost suddenly disappearing with a gurgling sound. A bandage was applied, and he was discharged on the following day.

[The third case, one of oblique inguinal hernia in a man aged 31, by trade a smith, was admitted Nov. 1st, 1851, at nine p.m.]

A firm, elastic tumour, about the size and shape of a common pear, communicating an impulse on coughing, but not tender to the touch, extends from the left inguinal ring into the scrotum. He first perceived a swelling in this region nine years since, after great exertion, during which, he thinks, he strained himself. It disappeared under pressure. It was repeatedly returned, but he has never had any difficulty in reducing it. He has generally worn a truss. Yesterday, about seven a.m. (twenty-six hours ago), he incautiously lifted a heavy weight, not wearing the truss; the rupture descending, became suddenly larger and more tense than usual, and he was unable to return it. About twelve hours since, he took a dose of croton oil, which produced two scanty evacuations, the last occurring about three p.m. Previously to his admission, taxis had been persevered in for a considerable time by a medical man. He was at once placed in a bath (temperature 98°), and after remaining in it for fifteen minutes, taxis was employed for ten minutes without producing any effect upon the tumour. The symptoms not being urgent, he was placed in bed, and ordered pil. saponis c. opio gr. x.

Nov. 2, ten a.m. He has passed a good night, having slept comfortably. There are no fresh symptoms; the bowels have not acted. Having been placed completely under the influence of chloroform, the hernia was readily reduced.

Nov. 6. He has been discharged, wearing a truss.

[In another case of oblique inguinal hernia, produced by slipping while carrying a load, although the warm bath and taxis failed in reducing it, yet after some time and trouble, it yielded under the influence of chloroform. A week afterwards the patient was discharged.]—*Med. Times and Gaz., April* 30, 1853, *p.* 458.

[The alleviation of pain is by no means the only recommendation for the use of chloroform in cases of hernia. In many now recorded, the use of the anæsthetic prevented the operation, by enabling the reduction to be effected.]

When a patient is fully under the influence of chloroform, he is in a condition very favourable for the reduction of an hernia by taxis. All the muscles are completely relaxed, and pain being suspended, no resistance is made to the necessary manipulation. We gain at once, indeed, many of the advantages belonging to other and older plans of treatment, *e. g.*, tobacco enema, venesection, &c., without any corresponding evils. The chief good effects of the warm bath are here also produced; and this is the more important, as this valuable adjunct in the treatment of hernia—except in hospital practice—is often only obtained with great difficulty, and after considerable delay. Indeed, it appears from numerous observations, that the use of chloroform in the treatment of hernia is attended with decided advantages over all other means which can be employed. For example, in three of the four cases related, chloroform succeeded after the warm bath (hitherto considered as our most useful auxiliary) had failed. Doubtless, the value of chloroform, under these circumstances, is mainly dependent upon the complete muscular relaxation induced; and this is a point to be particularly attended to. Every surgeon is aware how forcibly attempts at reduction by taxis are opposed by the violent, in some cases almost spasmodic contraction of the abdominal muscles; indeed, the same cause that expels the intestine from the abdomen, still acts to prevent its return. No means with which we are at present acquainted are equal to chloroform in producing complete muscular relaxation without danger or delay. But the objections to its employment in cases of hernia are not to be overlooked, and the more so, as by judicious management they may be often overcome. The two principal are (1) the violent muscular exertions which often occur during its administration, and (2) the sickness which sometimes accompanies returning sensation. The former of these evils may generally be avoided by the observance of due care in its administration. If given very gradually at the commencement, and if no attempts are made to compel the patient to inhale, in spite of alarm, and the chloroform be pure, and if, subsequently, when the muscular actions which generally precede total insensibility commence, its administration be effectually continued without intermission or delay, we shall generally succeed in producing the full effects of chloroform, without the severe struggling

which frequently occurs. The second evil, sickness, is much less within our control; the condition of the stomach is generally the cause, sickness usually follows when chloroform is administered shortly after a meal. We can only look to the quality of the chloroform; this and many other effects, as coughing, &c., often depending on slight impurities.

It has been stated, that the inhalation of ether produces more decided muscular relaxation, and is, therefore, preferable, in cases of hernia and dislocation, to the use of chloroform. Now, ether is much less powerful, and, therefore, much less rapid in its action, than chloroform; consequently, when inhaled, it enters the system more gradually. This may explain the more decided effects which are said to result from the use of ether; and it reminds us of the advantage to be obtained from the gradual and cautious administration of chloroform, more especially at the commencement of the process. The difference observed between the effects of ether and chloroform appears to be, in a great measure, due to their relative strength.

From the observation of a considerable number of cases, it appears to me, that many of the unpleasant complications, especially struggling, which often attend the administration of chloroform, are, to a great extent, dependent on the instrument employed. In this, as in most cases, the simplest plan is the best. It seems that chloroform can be administered in every respect most advantageously by means of a handkerchief or a piece of lint. All instruments appear to be more or less objectionable, perhaps in direct proportion to their complexity. The prejudice which generally exists against the use of the handkerchief arises from its supposed danger. In the hands of a careless or incompetent person, some of the instruments which have been contrived may possibly be employed with less risk of danger, but such persons are not justified in administering chloroform under any circumstances, and, with ordinary care, the use of the handkerchief is at least as safe as the employment of a more complicated instrument. These opinions are held by some of the most eminent surgeons. Another objection urged against the use of the handkerchief is, that chloroform is wasted in this way. With a little care this may be in a great measure avoided, and even allowing this objection its full force, it is but a trifling one. It has been said, that when chloroform is administered on a handkerchief, so much escapes that the atmosphere of the room becomes unpleasantly impregnated. This may happen when the exhibition is prolonged for some considerable time, but under such circumstances the same objection applies to instruments. It has also been objected to the handkerchief, that we cannot estimate so exactly the quantity of chloroform inhaled, as some is lost by evaporation. This objection applies equally to all instruments from which the vapour of chloroform can escape. But the chief point to be attended to in the administration of chloroform is not the quantity consumed, but the effects produced. Women and children are often alarmed by the sight of any instrument; however simple it may really be, it appears to them mysterious. This is no trivial objection. They will readily inhale chloroform when merely dropped upon their handkerchief. So far as my observations extend, many of the disagreeable circumstances which often occur when an instrument is employed, such as struggling, shouting, coughing, congestion of the face, &c., seldom arise when a handkerchief is used. In cases of hernia, more especially, this is a great point to be attended to.

It is important that the administration of chloroform be continued till muscular relaxation is fully induced before taxis is employed. If attempts at reduction are made while the muscles are tense, more harm than good results from its use. On the other hand, we must be mindful not to continue our efforts at reduction, during the insensibility produced by chloroform, for an undue length of time. The patient, being unconscious, can give us no warning by his complaints that we are pressing our attempts at reduction too far, and, in our anxiety to succeed, we may overlook the time and force employed.

If such attempts at reduction are unsuccessful, should the operation, supposing it be deemed necessary, be at once performed without allowing consciousness and sensibility to intervene? The advantage of this plan is, that we spare the patient a second administration of chloroform; the objection to it is, that we must then prepare our patient beforehand for the worst, and thus sometimes needlessly alarm and distress him. Perhaps the circumstances of the case may be our best guide. When there is a fair chance of success we may attempt reduction under chloroform *without distressing him* by the idea of an operation; when, on the other hand, our

chances of success by taxis are small, we may prepare him at once for the worst, and employ chloroform as a preliminary to the operation, if that should become necessary.

The good effects derived from chloroform are not at an end when an operation is required. The pain and consequent terror of this proceeding is abolished by its use. But the preservation of life is more important than the annihilation of pain, and perhaps the happiest effects of chloroform in hernia are witnessed in the results which often follow its administration. It would perhaps be difficult to mention any event which the surgeon hails with greater pleasure, after an operation for hernia, than the supervention of natural sleep. Indeed, to procure sleep after an operation is often an indication of no mean importance to be fulfilled. Calm and prolonged sleep is often the precursor of a rapid recovery. It may be said, indeed, that sleep thus appears beneficial because it only occurs in the absence of any bad complication; but after making every allowance for this fact, many cases most unequivocally demonstrate the advantages of sleep, after an operation for strangulated hernia. Such sleep often follows when chloroform is employed. It is frequently promoted, nay, sometimes induced by it. The patient does not appear to awake from the effects of chloroform, and a natural sleep without the intervention of consciousness seems to succeed the artificial one.—*Med. Times and Gazette, June* 4, 1853, *p.* 586.

86.—*Strangulated Femoral Hernia—Removal of a large Mass of Omentum—Peritonitis—Sloughing of the Sac—Recovery.* Under the care of Mr. ERICHSEN.—[This patient, a female, aged 67, was admitted into University College Hospital January 11, 1853, at 9.30 A.M. All efforts by the taxis, even with the aid of chloroform, failing to reduce the hernia, the sac of the hernia was laid open. A large lump of omentum presented itself, and, after a little search, a tight stricture was divided, surrounding a small knuckle of intestine, and the reduction accomplished: but the question remained as to what was to be done with the omentum.]

Conclusively opposed to the idea of returning it were the circumstances, that it was very large, much congested, adherent to the sac, and had probably been down for a long time. If left in the wound, sloughing would probably ensue, and induce great constitutional irritation. Mr. Erichsen accordingly determined to remove it, and to adopt, according to his custom in such cases, the plan of ligaturing the whole constricted neck of the tumour, rather than each vessel singly. For this preference he alleged as a reason, that it was very desirable to prevent the portion left behind from passing up into the abdomen, which might be much more easily accomplished by one large ligature than several small ones. A piece of whipcord was accordingly passed round it, as close as possible to the femoral ring, and the lower portion, having been cut off, was gently separated from the sac, to which it adhered, and removed. The end of the cord was turned up on to the abdomen, and there fixed by means of a strip of plaster, so as to retain the divided omentum in place. The sac, which was very large, was next plugged with sponge, and, the wound having been covered with wet lint, the patient was sent back to bed. Capt. vin. opii ℥xxv. statim.

The portion of omentum cut away was afterwards found to be six ounces in weight.

At two P.M., there were symptoms of commencing peritonitis; the belly was tympanitic, and slightly tender; pulse 90, soft; tongue moist, and thinly furred; knees a little drawn up. Hirud. xij. abdom.

℞. Hydr. chlorid. g. ij.; pulv. opii gr. ss.; 4tis horis sumend.

Jan. 12, one A.M. Hirud. xxiv. The pain in the abdomen continuing with but little improvement, the same number of leeches were again applied at noon, and at midnight a blister was ordered to the abdomen. Tinct. opii ℥ xxx. horâ somni sumend.

13th. Pulse 120, sharp and hard; abdomen tympanitic and tender; she is very restless, and appears to be in great pain. Hirud. xxiv. To continue warm fomentations to the abdomen.

16th. A profuse diarrhœa commenced yesterday; in other respects she is a little improved.

℞. Morph. acet. gr. j.; sacchari, gr. x.; 6tis horis sumenda, cum sp. vin. gallic. ʒj.; et conf. aromat. gr. x. A starch enema to be administered.

17th. There is still tenderness over the whole belly, which is also tympanitic; she lies, however, on her left side, and the knees are not drawn up; pulse very weak; bowels not open; tongue dry and furred.

18th. The ligature from the omentum came away to-day; the interior of the sac, which has throughout secreted a very unhealthy discharge, is in a sloughy condition, but the destruction does not involve any part of the edges of the skin; the abdomen is now flaccid and free from tenderness; pulse 26, and of much better power. Mr. Erichsen ordered a lotion of the chlorinate of soda to be freely applied to the interior of the sac, and over the whole a bread poultice. The powders were suspended yesterday.

19th. Much better; the sloughs are separating, and the wound is granulating healthily. Pulse 112, soft, and of fair power. From this date, progressive improvement took place, and she was discharged quite well on February 28th.

[The notes of both this and the following case are by Mr. Griffith. The *Second Case* was one of strangulated congenital hernia, in which a large mass of omentum was also removed, though it was adherent to the testis. This case was likewise under the care of Mr. Erichsen.

The patient, a man aged 35, was admitted January 7th, at 9 P.M. From a child he has had occasionally a large protrusion, but it had always been readily reduced. He had worn a truss, but it was inefficient. From the 5th of January, however, the tumour had not been reduced, and he had suffered from violent vomiting and constipation. The size of the tumour was that of two fists, long and ovid in form, in the left side of the scrotum. The taxis and chloroform having failed, the operation was proceeded with.]

Having exposed the sac, and divided the stricture, he attempted to effect reduction without opening the former, but, in doing so, it gave way under his hands at the lower part, where it was excessively thin, and a large mass of thickened omentum protruded. The omentum was found to be closely adherent to the testicle. Just within the neck of the sac, and almost concealed by the rest of the tumour, was a knuckle of deeply-congested intestine, of a chocolate-brown colour, but glistening, and otherwise healthy. The stricture was now further divided in the usual direction, and the coil of bowel carefully replaced and retained in position by pressure with the hand over the internal ring. Mr. Erichsen next applied a ligature of whipcord to the neck of the omental protrusion; and, having divided its adhesions to the testis, it was then cut away and removed. This omentum was not only indurated and thickened, but a good deal congested. Mr. Erichsen alleged as his reason for removing it, that if left, it would, from its size, and from the probability that some of it had been a very long time there, almost certainly slough. The wound having been dressed as in the preceding case, the patient was returned to bed, and had administered two grains of opium in the form of pill.

On the morning of the 8th, there was much tenderness over the whole abdomen, and the exposed testicle was acutely inflamed.

Hirud. xviii. ℞. Opii gr. ss.; calomel gr. ii.; 4tis horis sumend. Fomentations to the whole abdomen.

On the 9th, he was somewhat better: and by the aid of a simple enema, the bowels were freely opened.

10th. He was so much improved, that the pills were discontinued.

11th. Abdomen distended, but not very tender; the testicle is still swollen and painful; appetite good; bowels open; tongue moist.

18th. The sac has throughout been in a very unhealthy condition, and the whole scrotum is now much swollen and discoloured. As the pus, which is of a dirty grumous character, appeared to lodge in the lower parts, Mr. Gamgee, the house-surgeon, made an extension of the wound lower down, in order to permit of its more free escape.

20th. The patient, as regards his general health, is doing well; the scrotum is injected with red wash. Mr. Erichsen made a counter-opening in its lower portion, in order yet further to obviate the tendency of the pus to bag.

21st. During the night there was a sharp hemorrhage from the edges of the cut *made yesterday*, which, however, ceased spontaneously.

Feb. 8th. Steady improvement; all the slough has separated, and the wound is granulating healthily.

About a fortnight later, the man was discharged quite well.—*Med. Times and Gazette, April* 30, 1853, *p.* 446.

87.—*Reduction of a Scrotal Hernia which had been for nearly six months irreducible.*—Under the care of JOHN HILTON, Esq., at Guy's Hospital.—[Although this hernia had existed in an aggravated form for above six months, and all attempts to reduce it had failed, yet, with the exception of a dragging sensation in the abdomen and back, no symptoms of strangulation had at any time manifested themselves.]

On examination, there was found in the left scrotum a large, movable, irregularly nodulated mass (omentum), which was soft, flaccid, and free from tenderness. Nothing like intestine could be felt. The neck of the tumour at the external abdominal ring appeared to be tightly constricted. The bowels were ascertained to have acted regularly each day. Having made careful and persevering, but ineffectual attempts to effect the reduction of the tumour, Mr. Hilton directed—1st, That the man should observe an undeviatingly recumbent posture. 2ndly, That he should have solid food, with not more than half a pint of fluid in twenty-four hours. 3rdly, That a bladder of ice should be kept constantly applied to the scrotum, the latter being elevated on a cushion placed between the thighs. 4thly, That a draught, containing sulphate of magnesia and colchicum wine, should be administered three times daily. Mr. Hilton remarked to those present, that to a young man who had earned his livelihood by hard labour, it was a matter of very great importance to be relieved, if possible, of such an affection as the present, which, apart from the inconvenience necessarily attendant on its bulk, would perpetuate a liability to the occurrence of strangulation. He pointed out that the important obstacle to reduction was probably offered by the loaded condition of the bloodvessels of the protruded part, and that, consequently, the indications for treatment were—1st, to decrease the quantity of the circulating medium generally, as far as might be done without unduly depressing the vital powers; and 2ndly, by local means to constringe and unload the congested vessels of the incarcerated omentum. The one was to be accomplished by purgation, diuresis, and abstinence from fluids; the other, by the recumbent posture and the application of pressure and of cold. With respect to the last mentioned agent, Mr. Hilton further remarked, that, in the case of tumours within the scrotum, the use of cold, by exciting constant and powerful contraction of the dartos, insured the application of the best and most uniform kind of pressure which could possibly be exerted. The effect of purgation was also extremely valuable, since not only did it unload the vascular system generally, but that part of it especially involved in the existing lesion, the omental veins being, with those of the intestines, tributary to the vena porta. It was just possible also, that, by keeping the stomach and transverse colon comparatively empty, the contractions of those organs, to both of which the omentum is attached, might exert some little influence in tending to drag upwards into the abdominal cavity the displaced portion of omentum. To return to our case. After the afore-mentioned treatment had been rigidly pursued for a few days, it was noticed that the man's belly had lost its rounded contour, and become pinched in and narrow; the tumour, also, had diminished in size, and felt soft and loose, having lost its plump and definite form. The bowels had been freely purged.

On the 28th, Mr. Hilton again examined the tumour, and, with very slight pressure, succeeded in passing it up to the abdomen.

On the 30th, the man was discharged, quite free from all the inconveniences of his complaint; and, by wearing an efficient truss, the hernia had not again protruded.—*Medical Times and Gazette, May* 28, 1853, *p.* 554.

88.—*Operation for Hernia by the Small Subcutaneous Incision.* Under the care of J. HILTON, Esq.—[No doubt the much less mortality in hernial cases is owing to a great extent to the present improved method of operating in them. The following, at Guy's Hospital, is a good example. The patient, a female, aged 69, had suffered from severe symptoms of strangulated femoral hernia for thirty-six hours. Being a thin, lax-fibred woman, the relations of the swelling were easily felt.]

Having failed in his attempts at reduction by the taxis, Mr. Hilton at once pro-

ceeded with the operation for the division of the constriction. The tumour being held to the outer side by Mr. Maunder, one of Mr. Hilton's dressers, an incision about an inch long was made through the skin and cellular tissue, on the inner side and somewhat below the neck of the sac; a director was next introduced, and by a little care insinuated within the constriction external to the sac. With a small, blunt pointed bistoury the stricture was then notched, after which the bowel returned readily into the abdomen. With the exception of a small portion, not so large as the tip of a finger, the sac had not been seen by the operator. The edges of the wound were at once brought together, and covered by a strip of plaster. All urgent symptoms were at once relieved, and the patient slept fairly during the following night. On the third day, the bowels acted spontaneously, and the plaster having accidentally got rubbed off the wound, the latter was found to have healed completely by the first intention, the cicatrix being, indeed, scarcely perceptible. The woman might be considered as quite well.—*Med. Times and Gazette, July* 30, 1853, *p.* 110.

89.—ON WOUNDS OF THE INTESTINES.

By G. J. Guthrie, Esq., F.R.S.

When an incised wound in the intestine is not supposed to exceed a third of an inch in length, no interference should take place; for the nature and extent of the injury cannot always be ascertained without the committal of a greater mischief than the injury itself. When the wound in the external parts has been made by an instrument not larger than one third, or from that to half an inch in width, no attempt to probe or to meddle with the wound, for the purpose of examining the intestine, should be permitted. When the external wound has been made by a somewhat broader and longer instrument, it does not necessarily follow that the intestine should be wounded to an equal extent; unless it protrude, or the contents of the bowel be discharged through the wound, the surgeon will not be warranted in enlarging the wound, in the first instance, to see what mischief has been done. It may be argued that a wound four inches long has been proved to be oftentimes as little dangerous as a wound one inch in length; yet most people would prefer having the smaller wound, unless it could be believed that the intestine was injured to a considerable extent. Few surgeons even then would like to enlarge the wound, to ascertain the fact, unless some considerable bleeding, or a discharge of fæcal matter, pointed out the necessity for such an operation.

If the first two or three hours have passed away, and the pain, and firm but not tympanitic swelling in the belly, as well as the discharge from the wound, indicate the commencement of effusion from the bowel, or an extravasation of blood, an enlargement of the opening alone can save the life of the patient. The external wound should be enlarged, the effused matter sponged up with a soft moist sponge, and the bowel or artery secured by suture. When a penetrating wound, which may have injured the intestine, has been closed by suture, and does not do well, increasing symptoms of the inflammation of the abdominal cavity being accompanied by general tenderness of that part, with a decided swelling underneath the wound, indicating effusion beneath, the best chance for life will be given by re-opening the wound. It is a point in surgery, which a surgeon should contemplate in all its bearings. The proceeding is simple, little dangerous, and under such circumstances can do no harm.

When the wounded bowel protrudes, or the external opening is sufficiently large to enable the surgeon to see or feel the injury by the introduction of his finger, there should be no difficulty as to the mode of proceeding. A puncture or cut, which is filled up by the mucous coat, so as to be apparently impervious to air, does not demand a ligature.

An opening which does not appear to be so well filled up as to prevent air and fluids from passing through it, as such wound cannot usually be less than two lines in length, should be treated by suture. When the opening is small, a tenaculum may be pushed through both the cut edges, and a small silk ligature passed around, below the tenaculum, so as to include the opening in a circle, a mode of proceeding I have adopted with success in wounds of the internal jugular vein, *without* impairing its continuity; or the opening may be closed by one, two, or

more continuous stitches, made with a very fine needle and silk thread, cut off in both methods close to the bowel, the removal of which from the immediate vicinity of the external wound is little to be apprehended under favourable circumstances. The threads or suture will be carried into the cavity of the bowel, as has been already stated, if the person survive; and the external part of the wounded bowel will either adhere to the abdominal peritoneum, or to one or other of the neighbouring parts.

When the intestine is more largely injured, in a longitudinal or transverse direction, or is completely divided as far as, or beyond the mesentery, the continuous suture is absolutely necessary.

When the abdomen is penetrated, and considerable bleeding takes place, it is necessary to look for the wounded vessel. When the hemorrhage comes from one of the mesenteric arteries, or from the epigastric, the wound is to be enlarged until the bleeding artery is exposed, when ligatures are to be placed on its divided ends, if they both bleed. I have seen the epigastric artery tied several times with success.

A Portuguese caçador on picquet was wounded at the second siege of Badajos, in a sally made by some French cavalry. He had three or four trifling cuts on the head and shoulders, and one across the lower part of the belly on the right side. He bled profusely, and when brought to me had lost a considerable quantity of blood, which came through a small wound made by the point of a sabre. This wound I enlarged until the wounded but undivided artery became visible; upon this two ligatures were placed, and the external wound was sewed up. The peritoneum was opened to a small extent, but the bowel did not protrude, and the patient (not being an Englishman, and not therefore so liable to inflammation) recovered after being sent to Elvas.

A soldier of the same regiment, cut down at the same time, died as he was brought into camp, having been severely wounded in the chest and the abdomen. He was said to have died from hemorrharge, from a wound in the belly, two inches in length, made by one of the long-pointed swords of the French dragoons. I had the curiosity to enlarge the wound, and found one of the small intestines had been cut half across, another part injured, and that the blood had come from an artery which had been opened by the point of the sword in going through the mesentery, which wound had caused his death.

The recollection of these and of other nearly similar cases causes me to say that when hemorrhage takes place from within the abdomen the wound should be enlarged; and that if an artery in the mesentery, or in any other place which can be got at, should be found bleeding, a very fine silk ligature should be placed, if possible, on each side of its divided extremities, and cut off close to the knot, the external wound being afterwards accurately closed. This is a point of practice to which future attention is directed.

When a musket-ball penetrates the cavity of the belly, it may pass across in any direction without injuring the intestines or solid viscera. It usually does injure one or the other, and it has been known to lodge without doing much mischief. The symptoms are generally indicated by the parts injured, although in all the general depression and anxiety are remarkable; their continuance marks the extent, if not the nature of the mischief.—*Lancet, April* 20, 1853, *p.* 399.

90.—CASE OF INTESTINAL OBSTRUCTION FROM DISEASE OF THE RECTUM.

TREATED SUCCESSFULLY BY OPENING THE DESCENDING COLON IN THE LEFT LOIN.

By ALFRED BAKER, Esq., Surgeon to the General Hospital, Birmingham.

[The patient in this case was a tall spare woman, aged 62. Mr. Baker saw her on the 15th August, 1849. She had great pain in the lower half of the body, with severe retching and some vomiting. These symptoms were supposed to arise from her eating some indigestible food. Calomel, purgatives, and enemata were prescribed, by which the symptoms were relieved. On the 1st October, 1849, she had a worse attack of the same kind, and complicated with double femoral hernia. With appropriate treatment she again recovered. On the 9th November, of the same

year, on being again sent for, Mr. Baker found many symptoms of intestinal obstruction present, and on examining the rectum, which he was led to do from the deep-seated pain in the sacrum, and other symptoms, Mr. Baker says:]

I found that, within reach of the tip of the finger, the bowel was obstructed by a firm growth, occupying its whole circumference: this had an uneven surface, and a dense consistence; near its centre was a small fossa, which appeared to be the lower orifice of the contracted portion of the canal. I attempted to dilate this opening with the finger, but its distance from the anus rendered this proceeding useless, and the slightest pressure from below pushed the strictured part upwards. The uterus was quite healthy, and could be moved independently of the diseased bowel. As the stricture did not seem to produce complete occlusion, she was ordered to take two pills every fourth hour, composed of five grains compound extract of colocynth and five grains of extract of conium; and an enema was given with the ordinary syringe, in the hope that some of it would pass through the contracted canal, and thus liquefy the accumulation above. Next day, finding that the enema had been expelled, after a few minutes' retention, without any fæces, and that the symptoms were unabated, I attempted to pass a small œsophagus-tube, and succeeded in penetrating the stricture for a short distance, but could not get through it; some fluid was, however, injected along the tube, all of which did not return. On the following day, finding that a little dark-coloured liquid stool had been voided, the tube was again tried; and a quarter of a drop of croton oil was added to each dose of the pills. By perseverance in this treatment, the bowels were, after two or three days, partially unloaded; and I hoped that time would now be gained for the dilatation of the stricture, with which object bougies of small size were employed, but with only a small amount of success. In a few days constipation returned, accompanied by symptoms of peritoneal inflammation. Her pulse rose to 100, she had loss of appetite, thirst, dry tongue, heat of the skin, with short and hurried breathing. The abdomen, which had been softer and smaller, again became tense, tumid, and tender, and her suffering was increased by very slight pressure upon it. She now took two grains of calomel with the fourth of a grain of opium every four hours; croton oil liniment was rubbed freely over the abdomen, and hot fomentations were assiduously applied. Under these measures she improved; the symptoms of peritonitis disappeared, the size of the abdomen was lessened, and diarrhœa shortly came on. The diarrhœa was not controlled by any stringent, but in a few days spontaneously subsided.

[On the 17th January, the condition of the patient was much aggravated. The return was completely occluded; therefore, he continues:]

At eight o'clock p.m., January 23rd, 1850, in the presence of Dr Heslop, Mr. Hale and Mr. James, I opened the descending colon in the left lumbar region, where it is not enveloped by the peritoneum. The patient being laid upon her face in bed, and her truss removed, lest it should interfere with the operation, an incision was made transversely across the left loin for five inches, commencing about two inches from the spine, and carried outwards midway between the last rib and the crest of the ilium. By this the skin and subcutaneous cellular membrane were divided; after which the latissimus dorsi, quadratus lumborum, and the lumbar fascia, were in succession cut through. The loose fat, which in persons who are not very much emaciated always exists in this situation, projected at the bottom of the wound, and an attempt was made to push it aside, so as to allow the bowel to come forward; this proceeding, however, failed, and it was necessary to remove several large masses of fat by the knife before the colon became visible. At first the intestine did not project, and the finger was passed into the wound to ascertain the cause; the cellular connections of the colon with the loin were thus broken down, and, on the withdrawal of the finger, the intestine distinctly projected at the bottom of the wound, having a pale, leaden, and greenish hue. It was next attached by four sutures to the skin at the edges of the first incision, and was then opened by a scalpel to the extent of an inch between the threads. A rush of most offensive air took place immediately that the bowel was punctured, and a stream of chocolate-coloured fæces, of the consistence of thin gruel, welled up from the opening. This continued to flow until more than a large wash-hand basin had been filled, when it ceased. The wound was then covered with pledgets of linen dipped in warm water; and a *thickly-folded* sheet was placed under the patient, and she was turned upon her back

in bed, with an inclination towards the left side, so as to favour the escape of matters from the wound. She took a grain of opium immediatetly, and was supplied with small quantities of beef-tea, gruel, and milk. I should, perhaps, remark that chloroform was not administered in this case, on account of the vomiting, which continued even during the operation. There was very little bleeding, and no vessel required a ligature.

January 24th. Feels greatly relieved by the escape of stercoral matter through the wound. This has not been incessant, but has recurred about every half hour through the night, and has always been preceded by pain in the bowels. Has had no sickness since the operation; has had some sleep, and has been able to take some liquid nutriment frequently. The expression of her face is still anxious, and she seems to be depressed by the frequent recurrence of colic-like pain. Her breathing is easier; her pulse 106, sharp, but stronger than yesterday; her skin is warm; her tongue whitish and moist; her abdomen is somewhat tender, though much lessened in size. She complains of smarting in the wound, which looks well, and is free from inflammatory action.

25th. Took a grain of opium again last night, and slept tolerably. The bowels act through the lumbar aperture about every hour, the approach of the evacuation being indicated by a griping or pinching pain, accompanied by flatulent rumblings. The whole of the fæcal accumulation has not yet been voided, but is escaping, mixed with fresh bilious secretion. To-day she had a scanty discharge per anum, composed chiefly of mucus, but having a little fæcal matter mixed with it. Her pulse has fallen to 90, her tongue is cleaner, and her appetite is increased. The wound looks well.

[On April 18th the patient is stated to have not one bad symptom, and from this time to the end of two years, she remained in the enjoyment of perfect health. Three months ago, however, serious symptoms began to arise, and at this period the condition of the bowel is thus described:]

The rectum remained much the same as at the time of the operation, the bulk of the thickening being perhaps a little increased. Since that time she has suffered an attack of sub-acute peritonitis, and her legs have become œdematous. The abdomen also has increased in size; and her symptoms indicate the probability that the morbid growth in the pelvis which closed the rectum has extended into the abdomen, and is now producing injurious effects upon the contiguous structures.

[A postscript is added to this case, in which it is stated that after the last report the dropsical symptoms rapidly increased, and the patient died on the 10th of February, 1852.]

When the body was examined, three or four pints of turbid serum escaped from the cavity of the abdomen. The peritoneum exhibited the effects of peritonitis; the intestines were glued together, to the omentum, and to a tumour as large as a man's head, which appeared to emerge from the pelvis. This tumour arose from the right ovary, and consisted principally of cerebriform cancer. A section of it displayed grey and white brain-like matter, with patches of ecchymosis here and there. In some parts of it there were cysts filled with the yellowish-brown glue-like matter of colloid cancer, and other cysts from which serum had escaped. In the pelvis another tumour as large as an orange was found. This was the left ovary, in which the same morbid degeneration was going on as in the right. The liver and the mesentery also contained similar deposits. The uterus was healthy. The colon was healthy throughout; below the opening in the left lumbar colon made by the operation, the sigmoid flexure and the rectum were larger than the natural calibre, and contained some ounces of dark-coloured scybalæ. At a distance of about three inches from the anus the rectum was suddenly and completely closed by a dense firm fibrous structure not more than a quarter of an inch in extent; below this part the canal was again pervious down to the anus, but was contracted and empty. The coats of the rectum immediately above the stricture had a healthy appearance, though softer and more lacerable than usual. The artificial opening into the colon in the loin was carefully examined. Its shape was oblong, and its cutaneous margin had a firm cordy feeling. The structures surrounding this orifice, which had given so much trouble by its tendency to contraction, consisted of the skin and a dense fibro-cellular membrane. The muscles and fascia of the loins were all traced to within three-eighths of an inch of the margin of the aperature, where they became blended

together, and terminated in a mesh of strong interlacing fibro-cellular fibres, which were intimately connected both with the colon and the integument around the artificial opening.—*Medico-Chirurg. Transactions*, 1852, *p.* 226.

91.—TWO CASES OF INTESTINAL OBSTRUCTION,

IN WHICH THE OPERATION FOR THE FORMATION OF AN ARTIFICIAL ANUS WAS PERFORMED; ONE IN THE ASCENDING, AND THE OTHER IN THE DESCENDING COLON.

By William James Clement, Esq., Shrewsbury.

[On the 8th of October, 1841, in consultation with Mr. Dovaston, Mr. Clement visited Mrs. Gough, aged forty-seven, labouring under symptoms resembling those of strangulated hernia. For 14 days no evacuation from the bowels had been obtained in spite of various purgative remedies and enemas. A drop of croton oil every two hours along with turpentine enemas were now prescribed. No relief whatever was obtained, and at a subsequent meeting, says Mr. Clement:]

I carefully examined all the parts likely to be the seat of hernia, and also the rectum, which freely admitted O'Beirne's tube to the extent of fourteen inches. A large quantity of tepid water was injected, but it returned almost colourless; and as the patient was able to retain several pints for some time, I concluded that the cause of obstruction was not in the descending part of the colon.

The vomiting had been very distressing since Friday night. If only a table-spoonful of beef-tea was swallowed, it was almost instantly rejected with double the quantity of liquid feculent matter. The abdomen was enormously distended; the hiccough very frequent; and the state of the pulse indicated the case as being nearly hopeless. Under these circumstances I suggested to Mr. Dovaston the propriety of affording the patient a chance for her life by making an artificial anus in the loin. The nature of the operation was fairly explained to her, with no concealment of the great uncertainty of its success. It was offered as a last resource, and freely accepted.

On carefully percussing the abdomen, I found that it yielded a clear tympanitic sound over its whole surface, except on the right inguinal and iliac regions. Here the sound was dull. When comparing the two sides of the belly, the right was evidently fuller and more distended than the left; and this difference was more apparent in the right lumbar region than the left.

The preparations for the operation being completed, the patient was made to lie on her belly, a firm cushion being placed underneath it. I made a free incision through the integument midway between the last rib and the crest of the ilium, commencing close to the spine, and terminating it in a line forwards with the anterior-superior spinous process of the ilium. I next divided the sacro-lumbalis and longissimus dorsi muscle, and part of the fibres of the quadratus lumborum. A quantity of fat and loose cellular tissue then presented, through which I carefully worked my way with the fore-finger and handle of the scalpel. This loose cellular and adipose tissue surrounds the kidney and intervenes between it and the peritoneal covering of the large intestine. By working downwards in the direction of the transverse processes of the spine, I kept clear of the peritoneum; and at a great depth in the wound I felt the right lumbar colon very tense, and offering a firm resistance to the pressure of the finger.

Before venturing to make an incision into the intestine, I was desirous of securing it by means of ligatures, and this part of the operation I found to be most difficult, in consequence of the great depth of the wound, and the want of needles with an acute angle. I however at length succeeded in transfixing the coats of the colon with two needles armed with a double ligature, and I then made a free incision into the intestine in a vertical direction. Out rushed a quantity of flatus and liquid fæces. In a few minutes we collected two large basinfuls of the latter, mixed with a considerable quantity of scybalæ. Although the inverted peristaltic action had gone on for so many days previous to the performance of the operation, and the vomiting had continued with scarcely any intermission, the presence of castor oil (large and *repeated doses* of which the patient had taken) was quite evident in the discharge *through the artificial opening.*

The relief experienced by the patient was most decided and immediate. In the course of a quarter of an hour the tension of the abdomen had much diminished; the hiccough ceased; and after several pints of feculent matter had been evacuated, the discharge gradually abated. I then draw the intestine more forward with the ligatures, and having passed the needles deep in the lips of the external wound, I secured the opening in the colon in a manner most favourable to admit the free escape of its contents. A large poultice of linseed meal was applied to the external wound, and the patient was placed in bed, and ordered to lie on her right side. She became faint and exhausted; but after taking a little brandy and water the pulse rallied.

Tuesday, 12th. On visiting the patient I was gratified to find the progress of the case as satisfactory as possible. Since Sunday evening there has been no vomiting, hiccough, or pain in the abdomen. The discharge through the artificial anus has been most abundant, and the tension of the abdomen has nearly subsided. There is no tenderness on pressure, and the pulse, though small and feeble, beats no more than 90. An enema was administered this morning, and brought away two very small scybalæ, which were coated with a putty-like substance. The patient complains of very great soreness in the wound, the edges of which are much inflamed, and the bottom shows a disposition to slough.

Ordered good beef-tea; the poultice to be changed frequently, and a large enema to be given night and morning.

Friday, 15th. I again visited the patient. She has had no unfavourable symptom until this morning, when a return of the vomiting occurred, and there is considerable tenderness over the whole right side of the abdomen. Pulse 86, rather jerking. Tongue much furred. I ascertain that since Wednesday evening the discharge through the artificial anus has been very scanty, and not a particle of feculent matter returned with the enemas, which have been regularly administered every night and morning.

On examining the wound I found the ligature quite firm. There was a thick slough, like a piece of moistened brown paper, filling up the bottom of the wound. This I pressed on one side, and gave exit to a considerable quantity of fæces.

Ordered thirty leeches to be applied to the abdomen, and two grains of calomel with a quarter of a grain of opium to be given every three hours.

Wednesday, 20th.—The progress of the case since last Friday has been most propitious. The tenderness of the abdomen soon subsided. The discharge through the artificial anus has been copious, but not the slightest particle of feculent matter has returned with the enemas. On examining the wound I found that the slough had separated, leaving a clear granulating surface at the sides. The ligatures were becoming loose; but as they did not appear to produce much irritation they were allowed to remain. The calomel and opium had been discontinued by the direction of Mr. Dovaston, and the only medicine taken since Monday was a small quantity of castor oil. Pulse 80. Tongue quite clear.

I did not visit Mrs. Gough again until Tuesday, 2nd November, when I found her sitting up and most grateful for her recovery. The ligatures had separated on the fifteenth day after the operation, and the whole length of the incision, excepting the part corresponding with the opening into the colon, was cicatrized. By the advice of Mr. Dovaston, the use of enemas had been persisted in night and morning; but they failed in bringing away even the smallest portion of fæces; and the patient told me she was convinced that no flatus had passed downwards since the operation had been performed. She had taken a dose of castor oil every other morning since my last visit, which produced a copious evacuation through the artificial anus.

I provided the patient with a short tube of elastic gum, which I directed her to wear in the artificial anus, and to remove whenever she feels an inclination to evacuate the bowels.

In six weeks from the day of the operation the patient walked the distance of a mile, and declared herself better in health than for many years past.

The most remarkable part of the history of this case remains to be told. At the end of six weeks from the performance of the operation, the discharge of fæces began gradually to decrease, although the patient continued taking castor oil. She was troubled greatly with flatulence, and occasionally with sharp lancinating pains through her abdomen. At the end of seven weeks the vomiting returned, accom-

panied with severe colicky pains. For two days there had been scarcely any discharge through the artificial anus, and that was of a very liquid kind. The patient declared her belief that there was some obstruction at the bottom of the opening. A messenger was dispatched for Mr. Dovaston; but before his arrival at the patient's house, she had experienced a sudden and effectual relief. A hard substance had shot out from the artificial anus, which, on examination, was found to consist of five plum stones firmly agglutinated to each other. These were followed by sixteen other single plum stones, and afterwards by a very copious feculent evacuation. On the following day three more stones found an exit, accompanied with two small bones, belonging, as I should conjecture, to the pinion of a duck.

Nine months after the operation, the patient, with the exception of the local inconvenience, has no interruption to perfect health. Every week she takes castor oil, which expels one or two plum stones. The number now collected amounts to eighty-six. She has given up the use of the enemas for some weeks, as they failed to produce any good effect; and she is confident that not even flatus has passed the rectum since the operation was performed.

The progress of the case, until within six weeks of the patient's death, presented no feature of particular interest or importance. At irregular intervals, other plum stones were discharged; and the total number collected was one hundred and sixteen.

By taking simple aperient pills, and an occasional dose of castor oil, the discharge through the artificial anus was free, and scarcely emitted any feculent odour. This circumstance went very far to reconcile the patient, and made her condition less loathsome and repugnant to feelings of female delicacy. The elastic tube had not been worn during the last year of the patient's life, the artificial anus being perfectly patent, and having no disposition to contract.

Within three months of her death, the patient was in the enjoyment of tolerable health. She could daily walk a considerable distance, and attend to her usual domestic affairs. The last time I saw her in Shrewsbury was in July, 1844, when she complained of loss of appetite and general debility. She had become much thinner, suffered greatly from flatulence, and required more frequent doses of aperient medicine. I had no opportunity of visiting her until nine days before her death, when I found her in a sinking state. She had then kept her bed about a fortnight; had taken but little sustenance; had no evacuation for many days, and at first obstinately refused all medicine. She was at length prevailed upon to take a few doses of an aperient mixture, which acted freely, and the discharge through the artificial anus occurred daily up to the 14th of October, when the patient died, having lived three years from the time the operation was performed.

The body was examined the day after death. Externally there was nothing worthy of observation but the extremely firm state of the cicatrix of the wound. The opening of the artificial anus was plugged up with feculent matter. The abdomen was slightly distended, and the whole body much emaciated.

On opening the abdominal cavity, the omentum was found remarkably thin, almost all trace of adipose substance being removed, leaving only a thin semi-transparent membrane. The cæcum and ascending colon were enormously distended.

I commenced tracing the intestinal canal from the duodenum to the cæcum, passing inch by inch through my fingers. The whole line was perfectly empty. There was no trace of disease or even adhesions until arriving at the termination of the ilium, where three membranous bands were discovered running in a lateral direction, and connecting that portion of the small intestines with the cæcum and ascending colon.

The cæcum itself and the ascending part of the arch of the colon appeared of unusual size, until it was suddenly cut short at the *transverse* part of the arch, by the intervention of the most rigid stricture I ever felt. If a piece of whip-cord had been firmly tied round this part of the intestine, the occlusion would not have been more complete than was effected by this organic change. The whole remaining portion of the transverse arch of the colon, its descending part, and the sigmoid flexure, were collapsed, and formed a thin flaccid tube.

The absence of all traces of inflammatory action in the peritoneum was very remarkable. There was no thickening, no adhesions (with the exception of the three membranous bands alluded to), or deposition of lymph. On making an incision into the intestine, between the strictured part and the caput coli, the muscular coat pre-

sented the appearance of the columnæ carneæ of the heart, throughout the whole length of the cæcum and colon up to the stricture, being very firm and fleshy. This appearance of the inner surface of the colon anterior to the stricture was like what is seen in the thickened condition of the bladder in cases of obstinate and long continued stricture of the urethra.

The stricture itself was of cartilaginous hardness, and the closing of the canal so complete that it would not admit the passage of even a bristle. The extent of the stricture was not quite a quarter of an inch, of a white, pearly appearance, perfectly smooth, and having no more apparent vascularity than a tendon.

The peritoneal lining of the abdomen was quite perfect, and I was surprised to find so little thickening in the neighbourhood of the part where the artificial anus was established. The opening forming the artificial anus was in the *posterior* part of the intestine, about an inch above the valve. The length of the opening was barely one inch. Considerable deposition of lymph was found around the posterior part of the intestine, by which it was rendered firmly adherent to the deepest part of the cicatrix of the external wound The meso-colon or duplicature of the peritoneum covering the intestine in this situation must have been separated by the great distension of the bowel, so as to allow me to open it posteriorly, without a breach of the peritoneum itself. The other abdominal viscera were healthy. No examination of the head or chest was allowed.

I believe this operation was first performed in England according to the directions of Mons. Amussat. Mr. Teale, of Leeds, performed the second; and the late Mr. Jukes, of Birmingham, the third. The detail of Mr. Jukes' case is worthy of careful perusal; and the one which I have now related proves beyond doubt the practicability of opening the *ascending* colon, without a breach of the investing peritoneal lining of the abdomen.

M. Amussat, to whom we are indebted for the revival of this operation, discusses, in a paper read before the Royal Academy of Medicine in Paris, the anatomical relations of the lumbar regions, and their connections with the corresponding portions of the colon. Speaking of the left colon, he says—"We find, upon attentive examination, that the intestine is destitute of peritoneum in at least its *posterior* third, being here surrounded by a cellular coating, continuous with that which lies upon the outer surface of the serous membrane. The three bands of longitudinal fibres may, in the lumbar colons, be described as anterior, internal, and external; and, by measuring the space between the two latter fasciculi, we may ascertain the dimensions of the part uncovered by peritoneum, since they point out the lines at which this membrane is reflected from the bowel upon the walls of the belly."

With regard to the right colon, M. Amussat reports that he has never yet found a lumbar meso-colon, although, when the intestine was contracted, the interval between the two folds of the peritoneum has been sometimes very small. At the same time he observes, that whilst the ascending colon acquires from this arrangement a greater degree of mobility than the descending, he has never yet found it possessed of a mesentery so perfect as to render it floative in the abdominal cavity. Admitting, therefore, that this objection may be urged against an attempt to perforate the right colon when empty, it will not necessarily constitute a sound argument against such an operation when the bowel is distended.

Although we have in many instances seen the peritoneal cavity freely laid open for the removal of large ovarian tumours with no dangerous results, I apprehend that in the performance of this operation for artificial anus, it is of the greatest importance to avoid a breach of the investing serous membrane. The wound is of necessity very deep, and in a part where sloughing, to some extent, is almost sure to take place, and any infiltration of feculent fluid within the abdominal cavity would cause inflammation and fatal consequences.

In performing the operation, I should always advise two ligatures to be passed through the coats of the intestine, leaving a sufficient space between them for a free vertical incision. With the two ligatures the intestine should be drawn upwards, as close as possible to the lips of the external wound, before the knife is plunged into the bowel.

[In the *Second Case*, the artificial anus was made in the descending colon. The patient was a stout and muscular man, aged 43. The symptoms were somewhat

similar to those in the last case, but the constipation had not been so prolonged. Mr. Clement proceeds:]

On this day, the 5th of April, I first examined the rectum. I could detect nothing wrong within reach of the finger. I then introduced a full-sized bougie, but could not pass it beyond the distance of six inches. No doubt now existed as to the seat of the obstruction; and on the following day I endeavoured to overcome it by using a variety of rectum bougies, but failed to introduce the smallest beyond six inches and a half. I then tried a full-sized elastic gum urethra bougie, and this evidently passed beyond the obstruction, for on withdrawing it a great discharge of flatus took place, followed by liquid feculent matter.

Considerable constitutional disturbance was the result of this attempt; and although the patient, by excessive straining, discharged small quantities of liquid fæces, his condition was gradually becoming more alarming.

On the 12th I made another careful attempt with the bougie, but the pressure of its point against the obstructing part caused such acute pain, and being followed by slight hemorrhage, I desisted from further interference. In the evening the patient was seized with a severe rigor and vomiting. Great tenderness of the abdomen supervened. Blood was taken from the arm, leeches applied freely all over the belly, and calomel and opium given every three hours.

In four days the inflammatory symptoms had subsided; the tenderness was entirely removed, but the vomiting continued, and only one slight discharge from the bowels had taken place between the 12th and 21st of the month.

The greatest attention was paid to the diet, and the irritability of the stomach was relieved for a short time by occasional doses of prussic acid.

Between the 21st of April and the 4th of May only three small liquid evacuations were produced, and these were attributed to the effect of repeated doses of the inspissated ox gall, suggested as a most useful remedy by my friend Mr. Heathcote, surgeon of this town. The ox gall was the only aperient taken that did not seem to increase the vomiting.

On the 12th of May, after excessive straining, the patient passed by the rectum three small fleshy substances of a placenta-like appearance, accompanied with some hemorrhage, and a little feculent matter. This was the last time any fæces passed by the rectum. I again examined the rectum with the finger, and found that I could just reach some morbid growth, which certainly was not tangible on the 5th of April.

The condition of the patient during the remaining month of May was most distressing. He was harassed with a constant hiccough, vomiting, and tenesmus. At times the straining was so great that blood escaped from the anus. The abdomen gradually became more distended, but was free from tenderness. As no relief could be expected from medicine, the vomiting becoming more constant, and the tension of the abdomen daily increasing, I proposed, on the 13th of the month, as a last resource, the formation of an artificial anus. The patient firmly declined submitting to the operation, and requested to have nothing given to him but opium.

From the 1st of June to the 18th he lived entirely upon small quantities of beef-tea, brandy, and soda water, and large doses of liq. opii sedativus.

This day, the 18th, for the first time, feculent matter in large quantities was vomited; and on visiting the patient in the evening, he told me if the feculent vomiting continued he would submit to any operation. The 19th passed with only the ordinary kind of vomiting. The 20th brought a recurrence of the feculent vomiting to a considerable amount, and then the patient earnestly requested to have the operation performed. The rectum was again examined with the finger, and the morbid growth was found to be much lower down. It entirely filled up the hollow of the sacrum, was spongy to the touch, and on withdrawing the finger it was covered with a bloody serum, which, however, had no unpleasant odour.

On the 21st of June, at one o'clock, the operation was performed in the presence of many of my professional friends. The stercoraceous vomiting had continued all the morning. The abdomen exceeded in size any that I have ever before or since seen. This enormous distension was not surprising when it is borne in mind that not a particle of feculent matter had passed the rectum from the 12th of May to the 21st of June, a period of more than five weeks. Pulse 120, very feeble. Countenance anxious and contracted.

The incision was made as in the former case, midway between the last rib and

the crest of the ilium, but on the *left* side, commencing about an inch from the spine.

The patient, although now much reduced in flesh, had been a very powerful muscular man; and I made a much longer incision than in Mrs. Gough's case, as I knew there would be a greater depth of parts to cut through. In dividing the muscles one vessel bled rather profusely, and some time was lost in the endeavour to secure it. After the division of the muscular fibres I came down upon loose cellular and adipose tissue. Pressing this aside I forced my finger deep in the direction of the transverse processes of the spine, and then felt the lumbar colon, but not so tense and resisting as in Mrs. Gough's case.

After clearing away the adipose substance, making the surface of the intestine more exposed, I passed two needles armed with silk ligatures through its coats, drew the bowel upwards, and then made a free incision into it in a vertical direction between the two ligatures. I was disappointed when only flatus escaped freely;—no fæces passed. By drawing the intestine upwards with the two ligatures, although the wound was a very deep one, I was able to reach the opening in the gut with my fore-finger, and felt satisfied that it was sufficiently large to admit the passage of fæces. Moderate pressure was made on the abdomen in the direction of the descending colon, but only flatus escaped from the wound; and after waiting some time, the patient was placed in bed on his left side, greatly exhausted by the severity of a protracted operation.

I feared that as no fæces escaped, the disease had extended above the part of the colon opened, and that the patient would not derive even temporary relief from the operation. Yet the part of the bowel opened seemed to be free from any thickening or disease.

I visited the patient at five o'clock in the evening, and found no improvement in any of the symptoms. The vomiting and hiccough had returned. There had been no discharge of fæces through the wound, but flatus had occasionally passed.

At nine o'clock I again visited him, and was much gratified to find an unlooked for improvement. About half an hour previous to this visit, he desired to have some soda water, which he drank freely. Immediately after he felt griping pains; flatus first passed through the wound, then an immense quantity of liquid fæces. The nurse had collected nearly a gallon, and it was still pumping out freely through the artificial anus.

June 22nd, 10 o'clock a.m.—There is a decided alteration in the expression of the patient's countenance. Since twelve o'clock last night he has only vomited twice. He has had no sleep in consequence of the constant escape of feculent matter from the wound. The abdomen is reduced in size, but is tender on pressure, particularly on the left side. Pulse 106. He has made no water since the operation. The catheter was used, and more than a pint of high-coloured urine drawn off. Ordered a grain and a half of calomel and a quarter of a grain of opium every four hours. Beef-tea and soda water.

[Up to July the 8th the report is very favourable; there was a moderate daily discharge of fæces through the wound, and there had been no return of vomiting or pain in the abdomen.]

This morning (July 8th) he was seized with acute pain in the left side of the belly, and had during the night a slight shivering fit. The enlargement in the left groin has much increased, and this morning an indurated gland in the right groin is perceptible. As the patient complained of some difficulty in emptying the bladder, the catheter was again introduced, but not more than a quarter of a pint of urine was drawn off. The application of leeches to the left side of the abdomen, and suspending the use of all stimulants, constituted the treatment adopted for three or four days. The pulse was increased in frequency. The urine very high coloured, and emitting a most offensive odour. It was now too evident that the disease was operating most unfavourably on the vital powers. The glandular affection of both groins rapidly increased; the difficulty of emptying the bladder was so great that the use of the catheter was required every night and morning. In addition to these untoward symptoms, the sloughs over the sacrum and hip gradually extended, notwithstanding all pressure was carefully removed by means of the water-bed. On this day I passed my finger again into the rectum, and found that the tumour had descended

close to the sphincter, and completely filled up the canal. The pressure produced by the morbid growth accounted for the difficulty in emptying the bladder.

It was satisfactory to know that, up to the day of the patient's death, no return of vomiting occurred, and no interruption to the daily passage of fæces through the artificial anus. The enlargement in each groin rapidly increased; that of the left assumed a livid appearance, and ulceration of the surface took place three days before the patient's death. The tumour also projected through the sphincter ani, and attained the size of a small orange. In substance it was rather firmer than the placenta; it was not sensible to the touch, but bled on the slightest fingering. The wound had almost healed, excepting at the part corresponding with the opening into the colon.

Although the patient was rapidly sinking, and suffering from the painful state of the sloughing wounds, he frequently expressed his gratitude for being relieved of what he termed "that horrible throwing up of the stools."

I endeavoured to alleviate his sufferings by repeated doses of opium, and the last week of his existence was one of comparative ease. The appetite gradually diminished. The pulse became weaker and fluttering. No delirium took place, but the patient retained his consciousness to the last; and expired on the 26th of July, having lived one month and five days after the performance of the operation. No examination of the body took place.—*Med. Chirurgical Transactions*, 1852, *p.* 209.

92.—CASE OF ARTIFICIAL ANUS, TREATED BY MECHANICAL PRESSURE WITHIN THE RECTUM.

By Dr. William Macdonald, Lecturer on the Practice of Medicine, Portland Street Medical School, Glasgow.

[Six years ago, a man consulted Dr. Macdonald concerning a wound in the right groin, an inch in length, through which the fæces passed insensibly. During five subsequent years, all treatment for this distressing condition proved of no avail, and the patient was informed of the incurable nature of his complaint. Dr. Macdonald goes on to say:]

About seven months ago I accidentally met the patient in question. I inquired after his health. He replied that his existence was a burden to him, and that all the fæces was now evacuated by the artificial anus at the groin, and that nothing but a little mucus came by the natural passage. On the spur of the moment I urged that he should remain in bed for some days to come, and during that period that he should constantly employ a pretty long piece of brown soap, shaped like a large wax candle, besmeared with olive oil, and kept well up in the rectum by a compress; and in order to provoke the descent (in part at least as formerly) of the fæces by the natural passage, I also urged that a cataplasm of bean meal should at night be kept to the artificial anus, while during the day it was to be dusted over with finely-powdered chalk, and moreover that he should take an alterative course of tincture of gentian and tincture of iodine, say five drops of the latter to a teaspoonful of the former three times daily, followed by castor oil twice a week.

At the time that I urged the employment of the mechanical pressure within the rectum, this measure was solely recommended in order to provoke in part the descent of the fæces towards the natural aperture. But great was my surprise, and great was the delight of my patient, when it was found that daily there was less fæces passed out of the artificial anus by the agency of the pressure within the rectum, and at the end of two weeks the artificial anus was completely healed by the constant pressure.

After the cure was effected, I began to ascertain the real cause of my success. It was certainly very simple, and obviously quite accidental, as far as I am concerned; and although not recommended at the time it was employed on the basis of scientific data, yet the experience of the event is well calculated to establish the value of the discovery. Thus the constant mechanical pressure of the soap within the rectum and over the sphincter and levatores ani, caused a constant tenesmus or desire to evacuate the contents of the alimentary canal, just as is produced by volition and the reflex action of the nervous system in the abdominal region during the effort of voluntary straining at stool. Again, in the constant exercise of this tenes-

mus, or straining as at stool, thus produced by the constant employment of the mechanical pressure, it is obvious that a further pressure of the parietes of the abdomen is called into constant exercise, whereby a contractile force is further applied to the three membranes of the intestinal canal—viz., the peritoneal, muscular, and villous coats, and thus by the combined contractile agency of all these various tissues was the artificial anus completely cured, solely by pressure.

The patient in question was quite well for four months, and would, as I think, have been quite rid of the unpleasant consequences of the artificial anus during the whole period of his natural life, were it not for an accidental fall into the hold of a vessel, having coals on board, about three months ago, by which fall he came in contact with an angular piece of coal, which, unfortunately for him, struck him over the very seat of the old artificial anus, and burst the integuments, through which the fæces passed out involuntarily and as formerly. Yet the employment of the same remedies as before healed the artificial anus again, in about the same period of time as before noted, and it remained whole for several weeks, and would have remained whole, as I think, also during the patient's natural life; but I must add, and I do so with regret, that within a few weeks my patient happened to be engaged in a tumult with some inebriated friends, and in the fray he received a kick over the artificial anus again, which lately remained reopened. The patient was then informed that whenever he gave up the vice of drinking ardent spirits to excess, and whenever he was desirous of employing the former remedies, I had not the slightest doubt but the said remedies would be crowned with success, as on the two former occasions.

I have not as yet had any experience of the effects of similar treatment, in cases of artificial anus produced by gangrene of the bowels, called by some practitioners a mortified hernia; but, reasoning from analogy, I should think so, all things being equal; at any rate the treatment would seem deserving of a trial under similar circumstances.—*Lancet, Aug*, 27, 1853, *p.* 186.

93.—ON HEMORRHOIDS.

By Dr. W. S. Okr, Senior Physician to the South Hants Infirmary.

[This kind of bleeding very frequently occurs as a sort of safety-valve in obstruction of the liver; acting immediately in relieving the portal system. In such cases it should not be interfered with, if it keeps within due limits. But in some cases these are exceeded, and great debility and general anæmic symptoms induced.]

The remedy which will be found most efficacious in restraining such hemorrhage, is the purified oil of turpentine, with the tincture of kino, as described in the following formula:—

℞. Olei terebinthinæ pur. 3ss.; tincturæ kino, syrupi zingiberis, āā 3j.; aquæ cinnamomi, aquæ mollis, āā 3iij.; misturæ acaciæ q. s. ad bene miscendum; fiat haustus bis terve die sumendus.

It is important that the oil should be first carefully rubbed down with the mucilage, and the other ingredients gradually added, in order that the draught may be well mixed; otherwise it may be rejected.

I will now adduce a few cases, to show the efficacy of this treatment.

Case 1. A tradesman, aged forty-five, the father of a large family, had been for a considerable time subject to daily hemorrhage from the veins of the rectum. He had lost so much blood with every stool, as to become blanched and exhausted. Several medical men had been consulted, who endeavoured to restrain the bleeding by a variety of remedies, both internal and external, but without success; and the patient had prepared himself for a fatal issue. Being requested to visit him at this time, I placed him at once under the above treatment. The effect was really marvellous. The bleeding was almost immediately controlled; and, what greatly surprised me, the stools, which had been of an ash colour—and they are always of a light colour in these cases—assumed a healthy and well digested appearance. It is, therefore, probable that the turpentine not only acted as a styptic, but also as a deobstruent in removing, in some way or other, the hepatic obstruction. Be this as it may, the bleeding never returned; the patient gradually regained his good looks, and has for many years enjoyed excellent health.

Case 2. A lady, aged forty-seven, unmarried, of a bilious aspect, and regular in her menstruation, had been for some time disordered in the hepatic function, and subject to severe facial neuralgia. She was, at the time, in the habit of losing large quantities of blood by stool. After a while, the bleeding ceased spontaneously; but her general health did not satisfactorily improve. Shortly afterwards the hemorrhage returned, and continued daily for two months; when she became so bloodless and debilitated, as to occasion great anxiety and alarm to her friends. I went to town to see her, and immediately recommended the turpentine in the above formula. In a week the bleeding was controlled, and the medicine was left off. It returned, however, as profusely as before, and the remedy was resumed three times a day for another week; after which it was again and completely successful. She has been in good health for the last two years.

Case 3. Mrs. C., aged thirty-nine, married, but without any family, came to consult me, in February, 1852, for bleeding from the hemorrhoidal vessels. She informed me that she had lost a large quantity of blood with every stool, but at no other time, for the last eight months. Her aspect was most unfavourable. She was pale as death, and was constantly drowsy. Her pulse was feeble and rapid, her tongue colourless and cold, her feet œdematous, her respiration hurried, and her strength so exhausted that she was scarcely able to walk across the room; in short, she appeared to be in a hopeless stage of anæmia.

In this case, as in the two former, the same treatment was equally successful. At her next visit, she told me that the hemorrhage had ceased on the third day after she had commenced the medicine, and reported herself much better. From this time her health steadily improved, without any return of the bleeding; and her strength was restored under the use of dilute sulphuric acid and decoction of bark, with gentle aperients.

Turpentine, in the above formula, has seldom failed in my own practice to insure the purpose of a styptic in this kind of hemorrhage. Whether it acts as a deobstruent also in removing the obstruction of the portal capillaries, I have not sufficient evidence to decide; though, from its subtle qualities entering the vascular system so rapidly, such a result is not improbable. It certainly appeared so to act in the first case. As a styptic for internal passive hemorrhage it stands unrivalled.

The bowels are to be regulated by such aperients as will gently act upon the liver, without irritating the rectum.

℞. Pil. hydrarg., extracti jalapæ (vel extr. rhei), extracti copaibæ, sing. ℥j.
Misce; divide in pilulas xij; è quibus capiat duas horâ somni pro re natâ.

Should the bleeding recur from a hemorrhagic idiosyncrasy, an injection of cold water should be employed every morning; which will not only evacuate the bowels, but give tone to the veins of the rectum.—*Association Med. Journal, Aug.* 12, 1853, *p.* 700.

94.—ON TYPHLOLITHIASIS AND TYPHLOSTENOSIS.

By Dr. Albers.

[The object of this paper is to show that these diseases—the formation of concretions *in*, and constrictions *of*, the cæcum—however much their constitutional symptoms may differ, are nearly similar in their terminations.]

1. Of intestinal concretions, those occurring in the cæcum demand our chief attention, on account of the severe sufferings produced by them. The attending symptoms are those of an inflammatory ileus, the result is most generally fatal. As to situation, they occur either (1), though most rarely, in the depression on the surface of the ilio-cæcal valve, looking towards the small intestine; or (2), in the vermiform process; or (3), on the broad surface of the cæcum, where they are generally retained by a projecting intestinal fold.

Even in the healthy state the ilio-cæcal valve is more strongly developed in its right half than in the left, and it there forms a depression similar to that of the semilunar valve of the aorta. This portion of the valve becomes still further developed in individuals who have repeatedly suffered from fæcal accumulations, or typhlitis *stercoralis*, and the above-mentioned depression then becomes a kind of pouch. In *this lie concretions* which probably have formed in the upper portions of the intesti-

nal tube, and which, having passed down, are accidentally detained in it. Half of such a concretion which was sent to the author was as large as a walnut, and consisted of two distinct layers. The external, a light, friable, calcareous crust of some thickness; internally white, and enclosing a few portions of the rind of kernels of fruit; externally brown, and speckled here and there with white points. The nucelus was surrounded with a similar but much thinner layer, appearing like a leaf folded on itself, and gradually blending with the nucleus. Between the folds lay blackish grey-brown masses of hardened fæces. Microscopic examination disclosed in both layers a number of amorphous granules, of which the internal were more transparent than the external. In the centre of the nucleus were observed, with the aid of the microscope, the remains of a portion of cabbage-leaf, and of muscular fibre, with crystals, including some of triple phosphate. From this, and the statement obtained of the post-mortem examination, it was inferred, that a nucleus of fæcal and calcareous matter had first formed, perhaps even in the highest portion of the small intestine, and that, during the retention of this nucleus in the pouch already described, a coating, consisting almost exclusively of calcareous granules, the result of a peculiar secretion of the mucous membrane, had been deposited on it. The condition of this thick coating, which was, moreover, quite uniform, proved the long detention of the concretion in the depression alluded to; the latter was, in this case, enlarged into the form of a sac, the mucous and muscular coats being atrophied in consequence of the pressure of the concretion, which was found immediatety under the serous coat. The author illustrates this simultaneous obliteration of the intestine by the analogy of œsophageal diverticula. In addition, a congestive or inflammatory irritation appears sometimes to occur around the concretions, perhaps even causing the formation of organic blastemas, which envelope the concretions, and, where the latter are encysted, give the entire the appearance of a morbid growth. In proof of this the author quotes cases of the occurrence of such calculous formations in other parts of the intestinal tube, but especially in the colon and the small intestines.

The concretions which occur in the vermiform process are, according to the observations which have hitherto been made, incrusted foreign bodies, or calculi properly derived from the mucous membrane.

The concretions found on the broad surface which the cavity of the cæcum presents internally have likewise been, in some instances, incrustations; in others, originally developed calculi. The author, in support of this, also quotes the observations of writers in reference both to man and the lower animals. These calculi have in general a roundish oval form, corresponding to the bulgings of the cæcum, and, like urinary calculi, present an uneven, mammillated surface, and frequently bear, as they do, impressions of the folds of mucous membrane. They consist of a light nucleus, on which the solid earthy layers have formed. In incrustations, too, the outer crust deposited around the foreign bodies is composed of layers, showing the interrupted manner in which the incrustation has taken place. Between these layers we find yellowish and grey deposits, as thin as paper, by means of which the several strata of deposit are, as it were, cemented together. In incrustations the nucleus is always a foreign body; in other concretions it is either a visible or invisible fæcal particle, or a pure calcareous mass. If the nucleus is soft, it may be assumed that it contains the residue of some article of food, such as crumbs of bread, or husks of oats or barley. Incrustations may contain the most dissimilar foreign substances, but a gall-stone rarely forms the nucleus. The question whether all alvine calculi are not incrustations, and chiefly such as are found around gall-stones, has been answered in the negative by the investigations and experience of the author and others, and it has been proved that concretions found in the cæcum are in general calculi purely derived from the mucous membrane, or incrustations, with commingled fæcal matter. The usual colour of these concretions in the human subject is brownish-yellow externally and in the nucleus, and white in the layers; in the horse they are ash-grey, both internally and externally; in serpents they are white; the bezoar of the mammalia is yellowish-white. Human concretions differ from those of the lower animals in the variety of their colouring, and their striking stratification. The best accounts given of the chemical nature of these formations are those by John, Davy, Thomson, and Wollaston. In no part of the intestine can the formation of concretions be regarded as the result of a purely chemical decomposition; the co-operation

of a vital action is always requisite; a morbid secreting process, by which either the chemical elements are placed in a position, and receive a tendency, to combine, or an adhesive matter capable of uniting them is prepared. This view is supported by the laminated constitution of the calculi and the simultaneous existence of several concretions. Most of them receive their foundation from the ingesta, and their further development is due to the aggregation of ingredients formed by abnormal secretion. The circumstances which determine these serial formations exhibit nothing essentially characteristic or different from those which attend other affections of the cæcum. Besides, most of what the author says on the subject, and on the treatment, is borrowed from others. A case observed by him, in which the calculus was expelled by suppuration through a vicarious anus, gives, with Monro's corroborative experience, a hint to surgery.

2. *Calcareous deposits and formation of bone on the cæcum and in the surrounding parts.*—The former take place principally in the areolar tissue which attaches the cæcum and ilium to the abdominal parietes, close to the edge of the intestine, in the depression which the bowel forms posteriorly where it lies on the abdominal wall. They form concretions from the size of a pea to that of a hazel-nut, which lie along the intestine in a series extending from an inch to an inch and a half in length. In the fresh state they are white, soft, and mortar-like; when dry, they are hard, as friable as chalk, or somewhat firmer; in the folds of the opening of the ilium into the cæcum round the junction of the latter with the colon, they penetrate from the sub-peritoneal areolar tissue into the wall of the intestine, injuring both its muscular coat and the intestinal canal. If they attain a more considerable size, they not only give rise to atrophy of the wall, but impede the peristaltic motion of the intestine. The fæces lie here, instead of being passed onwards, particularly when the earthy deposit, by its projection, diminishes the calibre of the canal, at the same time that by its size it interferes with the intestinal movements. Obstruction of the canal, impaction of the fæces and of the ilium, are the results. But a very calcareous mortary deposit seldom occurs in the cæcum without a similar deposit being at the same time found in the mesentery and in the lymphatic glands. Since the latter exhibit, in the chalky masses deposited in their interior, only the cicatrices of cured scrofulous affections, it is probable that the deposits around the cæcum owe their origin to the same disease, and that they are the remains of scrofulous formations which have previously taken place in the nighbourhood of this portion of the intestinal tract. The author, having attempted more fully to prove this position, proceeds to mention cases of illness caused by these chalky deposits. Since scrofula most generally leaves behind it only small morbid productions, from the size of a pin's head to that of a pea, which are subsequently found in the long fibrous areolar tissue surrounding the cæcum, and therefore appear in cicatrizing to have removed further from the intestine and to have withdrawn into the areolar tissue: and as they are even found in adults without having been attended with illness, they, as the remains of a disease which had existed, point to an interesting process of cure. On the contrary, those deposits which by their size prove injurious to the intestine, are so much more important for the physician, as they may even be the cause of death. A pain in the right iliac region, which is observed from time to time in scrofulous patients, is increased on pressure, and thus exhibits its inflammatory nature; tension of the part usually occupied by concretions, and of the entire swollen abdomen; attacks of diarrhœa with very mucous stools; nightly perspirations; paleness; fretfulness and variable appetite, lead to the suspicion of scrofulous depositions taking place in the neighbourhood of the cæcum. The occasional inflammatory irritation (pain) indicates what is going on in the cavity of the cæcum; when the inflammation extends to the mesentery, the seat of pain also becomes more extensive. If these symptoms, as they usually do, pass over disregarded, more considerable deposits of calcareous matter sometimes suddenly induce the most violent attacks of an inflammatory ileus. But even the less considerable depositions, which are not commonly brought under the notice of the physician, may excite an inflammation of the areolar tissue, a spurious peritonitis, which then in its turn may cause a perforation of the cæcum, as is observed in perityphlitis (rheumatica). Besides this deposition and calcification of the scrofulous matter in the areolar tissue, a calcification occurs in the glands which sometimes lie immediately on and about the cæcum. The *intumescence of the* mesenteric glands does not, generally speaking, always occur in the

several cases of scrofulous disease in the same part of the mesentery. Their accumulation around the cæcum is rare, and then it is often found that they contain within them mortar-like, chalky masses, one of which forms the centre point of each independent gland. Convolutions of glands, as large as hens' eggs, often occur on the edge of the cæcum inclining to the great mesentery, while some of smaller size are found in the little mesentery of the vermiform process. The effects of such glandular masses, whether they contain calcareous deposits or not, on the portion of the intestine they adjoin, are the same as those of the above described deposits. They paralyse the intestine by their pressure, and cause torpor of the bowels and obstinate constipation. These glandular formations explain many of the symptoms which attend scrofula, and especially the constipation so frequent in combination with pain in the ilio-cæcal region. The cæcum being compressed and paralysed by the enlarged mesenteric glands, is in such cases the proximate cause of the constipation. Ossification of the size of a pea, of a grape-stone, or of the shape of a little flat disk, occurs on the cæcum, especially on the arch of its free extremity. These are situated in the wall of the intestine, in the areolar tissue, or the muscular coat, and are consequently covered externally by its serous, and internally by its mucous, membrane. Dr. Albers's view is, that the subserous areolar tissue is the exclusive seat of such ossifications. Such superficial formations of bone appear to resemble those which occur in the form of flat disks under the pleura, on the arachnoid membrane of the brain, and on the peritoneum, and to be the result of a previous inflammation. The more frequent occurrence of such ossifications on the cæcum than in the rest of the intestinal tract has been supposed to be owing to its situation being more favourable to such formation. This portion of the intestine is more liable than the rest to insidious inflammatory attacks; an inflammation of the cæcum may generally (?) be suspected whenever the right iliac region is the seat of pain increased by pressure, and the other symptoms of the case indicate an affection of the digestive organs. If the inflammation run tolerably high, there will surely be a deposit of blastema in the intestinal walls, laying the foundation of osseous formation. In addition, it must be borne in mind, that scrofulous inflammations have their seat in this portion of the intestine, and in healing leave behind them chalky masses. Ossification of the appendix vermiformis, as well as the formation of chalky deposits on this part, is rare, although the deposition of scrofulous and tuberculous blastemas is frequent, particularly at its blind extremity under the peritoneum. Inflammation of the vermiform process seldom terminates in the manner above described, because the products of inflammation are almost entirely absorbed on the setting in of the convalescence. It is supposed that this process possesses such a discutient power, in common with other canals invested with mucous membrane, in virtue of the abundant secretion of the latter being a means of relieving the disease and removing the morbid products; and the mucous (and fæcal) masses found in the appendix, show that its mucous membrane is capable of producing an abundant secretion. Dr. Albers, in conclusion, narrates two cases in which chalky deposits were found in the vermiform process.—*Dublin Quarterly Journal of Medical Science, August*, 1853, *p.* 248.

ORGANS OF URINE AND GENERATION.

95.—CASES OF LITHOTOMY IN WHICH THE OPERATION WAS PERFORMED BY A NEW METHOD (RECTO-URETHRAL).

Under the care of Mr. Lloyd.

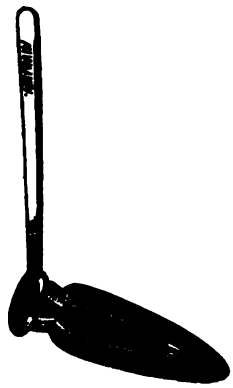
[For several important reasons, Mr. Lloyd was led to believe that a modification of the method of operating known as lithectasy, and the recto-vesical operation, might obviate many of the risks involved in either separately.]

The modification which he proposed was, to perform the first half of the operation as if for recto-vesical lithotomy, and the second after the manner done in lithectasy, or that by dilatation of the urethra. He determined to make an incision from the median line of the perineum into the rectum, dividing the posterior three-fourths of an inch of the former structure, and about the same length of the lowest part of the front wall of the rectum, thus including the anterior commissure of the sphincter ani

and the fascia and cellular tissue contained in the recto-perineal angle. The next step was to consist in dissecting upwards from the wound just made, still keeping in the median line, to the membranous urethra; and having entered the groove in the staff, and slit up the whole length of that part of the canal, the prostatic portion was to be dilated sufficiently to permit of the extraction of the stone, *without any incision into either prostate or bladder*. By keeping strictly to the median line, there could be no risk of wounding any important artery of either natural or irregular distribution, since none but the inosculating capillaries and small twigs from the opposite halves of the body are there found. Should any of the hemorrhoidal branches, which perhaps form an exception to this remark, be wounded, their ligature, in an open and comparatively superficial wound, like the one described, would be a matter of perfect ease. If an objection were made, that there was risk of wounding the bulb, the remark might be repeated by-way of answer, since it has been proved, that it is not from injury to the bulb itself, but to the artery of the bulb, that dangerous bleeding is to be apprehended. Respecting inflammation of the cellular tissue between the bladder and rectum, Mr. Lloyd believed, that by making a directly depending wound, freely dividing the sphincter ani, and the angle formed by the rectum and perineum, the possibility of the occurrence of its cause, viz., infiltration of urine, would be almost entirely removed; in fact, as a preventive measure, the exact proceeding would have been adopted which Sir Benjamin Brodie has recommended with some confidence, and practised with success, for the relief of this condition after its occurrence. That the new operation would be attended with but little risk of exciting peritonitis, Mr. Lloyd thought was evident from the consideration of the circumstances, that urinary infiltration would be prevented, that the wound would be made entirely from below, and at a considerable distance from the vesical layers of that membrane, and that neither the bladder nor the prostate would be injured. Having thus satisfied himself of the theorotic advantages which would attend his plan, Mr. Lloyd next proceeded by experiments on the dead subject to demonstrate its practicability. In one case in which it was tried (an adult), the necessary incisions having been made, the prostatic urethra was found to dilate so readily, that it was remarked, that a turkey's egg might have been extracted, yet, on dissection, afterwards it was proved that the gland had not been cut. By this result the most apparent objection to the plan, namely, that the structure of the prostate was of too unyielding a nature to permit of the extraction of a stone, was got rid of, at least as far as calculi of ordinary size are concerned. To the suggestion that wounds connecting the bladder and rectum were not prone to heal, but often left fistulæ, Mr. Lloyd replied, that in the proposed operation there would be only a connexion between the membranous urethra and the rectum; that it was notorious, that wounds of the rectum, attended even with complete division of its sphincter, usually closed favourably, as also openings from the perineum to the membranous urethra (as in the perineal section of strictures), and stated that he could see no reason why a combination of these two conditions should not heal just as well as either of them singly. In addition, also, to the preceding advantages, it was thought, that the bladder would be much more easily reached in the median line, and the stone extracted with greater facility through a direct than a lateral incision.

[In the case first mentioned, the patient was a boy, aged six years. The urine was ammoniacal and contained pus, and in sounding, Mr. Lloyd detected the presence of stone. It was decided upon to remove it, and on May 31st the operation was performed.]

Operation, May 31. Chloroform having been administered, the boy was tied in the ordinary lithotomy position, a curved staff, with a rather deeper and wider groove than usual, was introduced into the bladder, and the stone was again distinctly felt.



The staff being taken charge of by Mr. Paget, and held in the usual position, Mr. Lloyd next introduced into the rectum a metallic *speculum ani*, which, as it differed somewhat from those in general use, we here figure. Its peculiarity consists in it having a constricted neck, by which its retention within the contracted sphincter is rendered easy. This instrument having been introduced with its aperture turned upwards to the front commissure of the gut, its handle was given in charge to an assistant, and Mr. Lloyd next proceeded to the incisions. The angle formed by the junction of the perineum and rectum was transfixed and divided with a narrow-bladed scalpel, the knife being pushed with its edge directed downwards into the median line of the perineum, about half an inch from the verge of the anus, allowed to enter the front wall of the rectum, at about three-quarters of an inch up the gut, and then, by a single sweep, made to cut its way out downwards into the cavity of the speculum. The next step consisted in dissecting upwards and inwards to the membranous urethra, the operator keeping his left fore-finger in the wound, and feeling for the staff. Having found the groove in the latter, the finger was placed, in order to serve as a guide to the knife, on the anterior border of the prostate, at which point the knife was made to enter the groove, and by cutting *forwards*, division of the whole length of the membranous urethra was accomplished. A pair of small straight polypus forceps were next passed along the groove in the staff, into the neck of the bladder, and the dilatation of the prostatic urethra was accomplished by gently opening their blades, and then closing and re-opening them several times. During this process, which occupied nearly a minute, several gushes of urine escaped. The dilatation having been effected to such an extent that the fore-finger could be very readily passed, Mr. Lloyd withdrew the staff, leaving his finger as a guide, on which a pair of slightly-curved extracting forceps were immediately introduced. The stone was at once found, but, apparently from its occupying the upper and front part of the bladder, it several times eluded the grasp of the forceps, but when once firmly seized, it was extricated with great ease. In order to prevent the roughness of the stone from injuring the important structures in the floor of the prostatic urethra, Mr. Lloyd endeavoured, as much as possible, to hold the blades of the forceps with their convexities directed upwards and downwards, while passing through that part. The calculus proved to be about the size of a small damson plum, being quite smooth on one side, in which its nucleus, probably lithates, was displayed, but very rough on the other, from irregular phosphatic incrustations. Having examined the bladder with his finger, and ascertained that no other concretions were present, Mr. Lloyd introduced through the wound, into the bladder, a short gum elastic canula, and attached by means of a suture to one edge of the incision. The quantity of blood lost had been unusually small, and the operation had occupied but a short space of time.

[On June 1st the symptoms were very favourable, and the urine passed freely through the canula. On the next day the canula was removed, and from this date the recovery was uninterrupted. The next case was a boy aged 12: six weeks previous to admission he had received an injury in getting over some palings, which terminated in perineal fistula. During the treatment of the fistula a stone was discovered in the bladder. As soon as the boy's health was somewhat restored the operation was commenced.]

In its first steps, the operation, in this case, so precisely resembled that of the one just described, that we need not again detail them. No difficulty was found whatever in entering the bladder and dilating the prostatic urethra to the requisite extent. On introducing the forceps, the stone was at once seized, but, being friable, broke down into several portions, and was removed piecemeal, partly by the forceps, and in part by means of the scoop. The bladder being afterwards well syringed with warm water, to remove the detritus, a short canula was introduced, and retained by a suture. The quantity of blood lost had been rather more than in the preceding case, but much less than in the average of lithotomy operations. As far as could be

ascertained by fitting its fragments together, the stone appeared to have had originally a size about equal to a bantam's egg.

[Little need be said more concerning this case, as, like the last, the recovery was in every way favourable. In the next case the patient was 33 years old, but the operation was commenced and continued on the same plan. The stone was of large size, and removed with facility. It weighed nearly an ounce and a quarter. The recovery in this case was also exceedingly cheering. In all these cases the operation was performed with facility. A small quantity of blood was lost, and there was little constitutional disturbance subsequently. In the last case, it may be observed that the patient acquired voluntary power over the expulsion and retention of the fæces and urine on the seventh day, and on the ninth, the urine ceased to flow through the wound at all.]—*Medical Times and Gazette, Aug.* 6, 1853, *p* 138.

96.—*On Litholiby.*—Dr. Denamiel has read before the Académie des Sciences of Paris a memoir upon "Litholiby;" by which term he designates an operation consisting in the crushing of the stone, as it lies in the trigon vesicæ, behind the prostate, between an instrument introduced by the urethra into the bladder, and the fore and middle finger of the left hand, introduced per anum. He affirms that some calculi are so friable as to break under the least pressure; that the trigon vesicæ, where free calculi generally lie, is accessible to the finger introduced into the rectum; and that a sound passed into the bladder may serve as the *point d'appui.* He also states that the action of alkaline fluids upon the mucus, which forms the common cement of the elements of calculi, leads to the disintegration of the mass, whatever may be the chemical composition of the layers which compose it.

The distance from the integument to the neck of the bladder is commonly 2½ inches; it varies between 1 inch and 4 inches. The prostate gland and the trigon vesicæ are separated from the rectum by only a very thin layer of areolar tissue, in which fat is never deposited; consequently, any hard body may be easily felt and compressed.

The patient, having the bladder moderately distended, is put into the horizontal position, upon a properly constructed bed; the thighs separated and raised; and feet resting upon chairs. The left fore and middle fingers of the operator are then introduced into the rectum, and the stone is felt. A curved sound, grooved upon its convexity, as far as its vesical extremity, that it may the more readily hold the stone, is next passed into the bladder. Then pressure is made, until the calculus gives way. In many cases, a very slight amount will suffice. Should any difficulty arise, the pressure may be directed alternately towards the right or the left, that every part of the surface of the stone may be acted upon. In cases where the calculi are hard, several sittings are required, and the use of alkaline fluids becomes needed, to favour their disintegration. A quantity of warm water should be injected into the bladder after each operation, that the smaller fragments may be immediately washed away.—*Medical Times and Gazette, Aug.* 20, 1853, *p.* 198.

97.—IRRITABILITY OF THE BLADDER TREATED BY NITRATE OF SILVER INJECTIONS.

By William Reeves, Esq., Carlisle.

[Mr. Reeves remarks, that he believes he first got the idea of thus treating this disease from a French author. The action of nitrate of silver he considers to be that of a tonic to the mucous surface. He remarks upon the great benefit he has found from it in the treatment of varicose veins.]

Case 1.—M. M., aged fifty-six, of a fair complexion, and nervous temperament, called upon me early in the year 1850. Said he had been troubled with great irritability of the bladder for upwards of twenty years; had consulted many practitioners, and taken a numerous list of prescribed remedies without benefit. Cannot go to church for the frequent calls to void urine. Is not able to rest at night; two or *three tablespoonfuls* of urine in the bladder causes him the most intense pain, so

severe, that he is obliged to bend himself almost double till it is voided; and, latterly, the pain continues even after the bladder is emptied. His sufferings are so great, that life is a burden to him, and he is willing to submit to any treatment in hopes of relief. Tongue pale and flabby; lips and face pale; urine pale. Ordered a mineral tonic, and the bladder to be injected with a solution of nitrate of silver, of the strength of twenty grains to the ounce. After the injection he walked home, a mile or more, in great pain, and went to bed, and drank barley-water. The pain from the injection was more of a soreness than acute pain, and lasted a few hours. He then got relief, and was free from all symptoms for about six months. He then had a slight relapse; the nitrate of silver injection was repeated. He wished for it, and did not suffer much from it, and remained well for a few months afterwards. Some symptoms then making their appearance, by his own desire the nitrate of silver injection was used again, and he suffered a few hours as before, but since this period he has been well. It is upwards of three years since the last injection, and he now says—"I was never better in my life."

Case 2.—W. W., aged twenty, the son of delicate parents, and himself of a spare habit and nervous temperament, first came to me March 22nd, 1852; had been off health for more than a month. Prior to this, he says, he enjoyed good health, though three years ago he contracted gonorrhœa, which was cured after six months' treatment; never felt much inconvenience from this complaint. Now complains of frequent and painful calls to void urine, every two hours or oftener, and after having emptied the bladder a most excruciating pain extends from the prostate to the glans penis, and persists for ten minutes or more after each evacuation. This was not so much the case at first (a month ago), for he was relieved then after each evacuation. During the ten minutes of excruciating pain he feels as if there was more urine to void, which causes a great deal of straining, and the expulsion of blood and ropy mucus. Has been under treatment, and has been sounded for stone, which latter manipulation I subjected him to again without detecting any foreign body. A spasmodic stricture resisted the introduction of the sound; but being overcome, the process was easily accomplished, though not without great pain from the tenderness along the urethra and the bladder.

From all the circumstances of this case, I concluded it to be an aggravated form of irritable bladder, accompanied by chronic inflammation of the lining membrane, and at once injected the organ with a strong solution of nitrate of silver, and ordered him a mineral tonic, and a morphia draught. He walked home after the injection, a distance of two or three hundred yards, and went to bed.

March 23rd. He suffered uneasiness after the injection for a few hours, but nothing compared to the straining from the disease. The first time he voided urine after the injection, the pain was considerable, and he had to get out of bed five times within five hours after the operation; then the pain lessened, and he slept for seven hours, and afterwards voided urine in good quantity, and clear, and in a full stream, with some little smarting, but no straining followed, and no ropy mucus or blood.

24th. Feels considerably improved; there is little or no pain or uneasiness, and the calls to void urine are at pretty long intervals.

30th. Is altogether improved, and able to go about much as usual, as far as the bladder is concerned.

May, 1853. He has not again been troubled with the irritability of the badder up to the present date.

Case 3.—July 12th, 1852: G. M., aged thirty-five years, the mother of seven children; all her labours had been easy; has now suffered from ill health for two years. Her first indisposition began with pain in voiding urine, with frequent calls, and very little passed at each time. Night and day she was thus distressed; dare not leave home, the calls to void urine and the pain are so urgent; has daily been getting worse, and now, from the straining, blood and ropy mucus accompany each discharge of water. At first she got relief after emptying the bladder; now her pain is before and after the evacuation. After sounding, without any detection of a foreign body, the bladder was injected with a strong solution of nitrate of silver. She suffered considerably for a time after the operation, and then her symptoms lessened. At the present date, May, 1853, she is free from all irritability of the bladder.—*Lancet, June 11, 1853, p.* 536.

98.—REMARKS ON THE SURGICAL OPERATIONS USUALLY ADOPTED FOR RETENTION OF URINE.

By Edward Cock, Esq., Surgeon to Guy's Hospital.

[When all palliative measures have failed to relieve retention of urine, and the consequences are threatening the life of the patient, the surgeon has at his command three modes of treatment for the removal of the danger.]

He may take a small but strong catheter, one that will not easily bend, and, firm of purpose, with unflinching hand, and fearless—I had almost said remorseless—heart, he may carry it through all intervening structures and obstacles into the bladder. Again, he may take a knife and cut into the perineum, and endeavour to find and open the urethra behind the stricture and just anterior to the prostate, thus arriving at the bladder by a somewhat more surgical and scientific process than by the first method. Lastly, he may take a trocar and canula and puncture the bladder through the rectum or above the pubes, leaving the urethra and stricture inviolate and untouched.

There is nothing new in either of these measures for relieving retention. I have seen them practised, and have had recourse to all of them myself very many times. They may each possess certain advantages, and the circumstances of the case and the condition in which we may be placed, may incline us to the adoption of either the one or the other. They all have their drawbacks; but, on the whole, I am disposed to believe that the bladder may be reached with the smallest amount of pain, with the least risk of present or future danger, and with the greatest prospect of ulterior good, by puncture through the rectum.

The first of the three operations I have enumerated is, it must be confessed, somewhat Alexandrine in its character. It may be denominated "forcible catheterism." It is, as it were, puncturing the bladder with a blunt instrument—*tunnelling* through the perineum, under cover of the urethra. It is neither scientific in its conception, surgical in its performance, nor anatomical in its details. It can only be countenanced and justified on the principle, that the end sanctifies the means. Attempts have been made to modify and soften down its essential roughness by denominating it the operation of forcible dilatation or breaking down of a stricture, and the surgeon, perhaps, tries to delude himself into the idea that his instrument either enters the stricture and forcibly expands it, or else that it breaks it down and destroys it.

To the best of my belief neither of these desirable events ever occurs. The catheter neither expands nor crushes the stricture, but it altogether eludes it, passing outside the obstacle, and then either re-enters the urethra below, or else continues its course through the prostate into the bladder. I have, at different times, had the opportunity of examining (*post mortem*) the urethras of many persons who had evidently undergone this species of catheterism, and I have never failed to discover the loop, or, in railway parlance, the line of road, where the instrument had left the canal to re-enter it at some point below the stricture.

Nevertheless, the operation of forcible catheterism is one which we are not unfrequently obliged to have recourse to as the only means available to relieve our patient; and when performed resolutely and firmly, with a small strong instrument adapted for the purpose, it is not necessarily, or indeed usually, followed by the evil consequences which it might be supposed to entail on the sufferer. The great object in view, the evacuation of the bladder, is accomplished, and time is afforded for the employment of means to prevent the recurrence of retention. Still the evil day is merely delayed, as the stricture, the cause of mischief, remains in its original state; and a false passage has been added thereto, presenting a new obstacle to legitimate catheterism. We leave the urethra worse than we found it; the threatened disaster is staved off, but not annihilated.

The second method for relieving retention and establishing a ready outlet to the contents of the bladder, is one, I believe, of long standing and well known to all surgeons. This method consists in opening the urethra between the stricture and the prostate gland. A knife is carried through the perineum in the direction of the membranous portion of the urethra, and, guided by the finger in the rectum, the canal may be reached and opened a little anterior to the prostate. The urine may then be allowed to flow through the artificial passage, or, what is still better, a fe-

male catheter may be passed and retained in the bladder. This operation, when performed with dexterity and success, has a great advantage over that of forcible catheterism. The opening thus established may be rendered available for the evacuation of the urine during any length of period that may be necessary; whilst the diseased urethra, relieved from its function as a urinary organ, is no longer irritated by the constant pressure of the contents of the bladder from the one side or the repeated fruitless attempts to introduce instruments from the other. It may be allowed to repose and recover from the injuries it has sustained. Indeed, were this operation as easy to perform as to describe, it would, probably, long ago have become one of constant occurrence.

Every practical surgeon, however, is fully aware that to open the membranous portion of the urethra, even when the surrounding structures are normal and unaltered by disease, is by no means an easy undertaking; and that the difficulties may be so far increased by long standing disease of the perineum, by induration, fistulæ, abscesses, and partial extravasations, as to become insurmountable. Under such circumstances, I have seen incalculable mischief, and not unfrequently a fatal result, produced by the long-continued yet unavailing attempts of the surgeon to discover the urethra, and accomplish the object for which the operation was undertaken.

A modification, or rather an amplification, of this operation is sometimes practised, or rather attempted to be put into execution. It is called the "cure of stricture by division."

The principle consists in uniting the upper and lower permeable portions of the urethra by the division of the intermediate impermeable portion, and thus restoring the integrity of the canal. The operation is hardly adapted to cases of urgent retention, but has frequently been had recourse to in old chronic strictures accompanied by urinary fistulæ and sinuses, where induration of the perineum and an altered condition of the urethra and its surrounding structures has rendered impracticable the passage of any instrument. The theory upon which this operation is founded I have seldom seen carried out in its execution. The surgeon seldom succeeds in uniting the two pervious portions of the urethra by a clean, fair, and perfect division of the intervening strictured isthmus. In some few instances I have succeeded in carrying out my original intentions; but I look upon these rather as fortunate accidents under favourable circumstances, than as the legitimate results of well-ordered surgery. In several instances I have seen the operation abandoned after much mischief and disorganisation had been inflicted. In others, the surgeon has succeeded, after much time and difficulty, in carrying a catheter into the bladder; but a large majority of the patients so treated have died within the week, unmistakably from the injuries sustained during the operation. The *post-mortems*, while they revealed false passages, lacerations, and irregular sections in abundance, showed clearly how futile had been the attempt to divide the stricture, or to discover and lay open the patent portion of the urethra behind it.

So convinced am I, by experience and observation, of the difficulty which frequently attends the operation of opening the urethra behind the stricture where the land-marks which should guide us have been obliterated; so impressed am I with the danger and fatality which is likely to result from fruitless and protracted efforts to introduce a catheter into the bladder through the perineum, that of late years I have abandoned the practice of incising the perineum with a fixed determination to reach the bladder. I consider it more expedient to be contented with a minor triumph: and in those cases where retention and extravasation render it necessary that an outlet should be afforded to the contents of the bladder through the perineum, I limit myself to making a free incision down to the region where the urethra may be supposed to be situated; and thus, after having, to the best of my judgment, laid bare the site of the canal, and attempted, by gentle means, to introduce a catheter through the wound into the bladder, I prefer, if this cannot easily be accomplished, to release the patient from any farther cutting, searching, or manipulation. I have almost invariably found that the urine has readily and speedily found its way through the incision, and that thus the chief object in performing the operation has been realized. At a subsequent period, when the swelling has subsided and the parts have become quiet, an instrument may generally be passed, if it be found necessary, through the wound into the bladder.

I have glanced over these two operations for relieving retention of urine, viz., for-

cible catheterism and incision through the perineum, for the purpose of showing the unsatisfactory nature of the first, and the difficulty and danger which often attend the latter; difficulty and danger which, although perhaps not acknowledged, are so far felt, as frequently to restrain surgeons from incurring the risk and responsibility of putting it into practice; thus inducing a fatal delay by which many lives are sacrificed.

I am anxious to explain the motives which have induced me of late years to adopt puncture of the bladder through the rectum as a means for relieving retention, although it is an operation which at no time appears to have found much favour, which latterly has nearly fallen into disuse, and is almost universally condemned, in works on surgery, as a desperate remedy, only to be used in desperate cases, dangerous in its execution, and liable to be followed by mischief and misery to the patient.

It is somewhat singular that not one of the disastrous consequences which have been described, has been realized in the considerable number of instances in which I have performed the operation. I will, however, leave the cases to tell their own story, as my only object is to show how much the operation is worth in surgery, and how far it is legitimately available to relieve a condition which of all others calls for prompt and efficient treatment.

Case 1.—George E., age unknown; admitted into Guy's Hospital, February, 1846. He appeared to be in the last stage of renal disease, evidently under the influence of poison from urea, and could give no account of himself, except that he had passed no water for two days.

On examining his organs, the penis was found much mutilated by old disease, which had completely destroyed the glans and obliterated the urethra. An obscure fistulous opening existed in the perineum, through which he had probably passed his water; but this had now ceased to afford an outlet, and the perineum itself indicated incipient extravasation or an abscess. His belly was tumid, and the bowels apparently loaded. The bladder could be felt distinctly prominent above the pubes. When I saw him the usual means had already been adopted, but without relief either to his bladder or his bowels. The distension was increasing, and I punctured the bladder through the rectum, and drew off a large quantity of water. It was remarked that when his bladder had been apparently emptied, a certain prominence would still be felt above the pubes; and this remained unaltered until he died, although the urine continued to be freely evacuated through the canula. The operation afforded him immediate relief, and during the short remainder of his life, he suffered no more from retention. His bowels were with great difficulty opened by repeated purgatives and injections. He gradually sank into a comatose state, and died on the night of February 24, six days after his admission.

Examination.—The kidneys extensively diseased. The urethra obliterated throughout nearly the whole of its course. A supplementary bladder was found situated somewhat behind and to the left side of the true bladder, with which it communicated by an opening of considerable size. It seemed principally formed of mucous membrane protruded between the muscular vesical fibres, and was in fact an enormously dilated sacculus. The true bladder was empty, but the false one was full of urine, and constituted the permanent prominence just alluded to. It had pushed the real bladder over towards the right side, so that the trocar had entered the cavity of the latter just anterior and to the left of the opening of the left ureter. Not the slightest trace of mischief or indication of infiltration could be observed around the wound made by the trocar.

Case 2.—Thos. P., aged 43; admitted into Guy's Hospital, April 28, 1847. Dissolute and intemperate. Had suffered eighteen years from stricture, which had resisted all attemps at catheterism. Had several times been in hospitals and elsewhere, but no instrument had ever been passed into his bladder. A few weeks previously had been under my care for a few days. Had passed no water whatever for twelve hours: great agony and distress. Perineum full and tender. Being acquainted with the previous condition of this man, and knowing the inutility of delay or palliative means, I at once punctured his bladder, and evacuated between two and three pints of dark and offensive urine. I subsequently opened an abscess in the perineum.

April 26. I withdrew the silver canula and substituted an elastic tube, through

which he continued to pass his water until May 3, when I found but little difficulty in introducing a small elastic catheter through the urethra into his bladder. The canula was then withdrawn from the rectum. There was no further difficulty in the ordinary treatment of this case; and when he left the hospital, five weeks after his admission, he could make water in a full free stream, and was relieved from all his former symptoms. No urine escaped through the puncture after the removal of the canula.

He died of renal disease in May, 1851. On inspection, a faint cicatrix on the mucous surfaces of the bladder and rectum indicated the site of puncture.

Case 3.—J. R., aged 22; admitted into Guy's Hospital, April 28, 1847. Dissolute and intemperate. Has had symptoms of stricture five years, following clap, with occasional attacks of retention requiring the catheter. On his admission he was passing his water with extreme difficulty and distress, and his canal had been much disorganized by previous attempts to pass an instrument. All the usual methods, employed during four days, failed in giving him relief; and on May 2, he having passed no water whatever for twenty-four hours, I punctured the bladder. Three days afterwards an elastic tube was substituted for the silver canula.

May 11. An abscess was opened in the perineum.

May 14. The tube was removed, as it had become obstructed, and the water now flowed through the natural passage. He continued to pass *a portion* of his water for some days through the recto-vesical opening, and left the hospital perfectly well May 19, three weeks after his admission.

Case 4.—J. P., aged 35; admitted into Guy's Hospital, May 21, 1847. A policeman. Between three and four years ago he sustained much injury from a forcible separation of his thighs, and ever since has suffered from gradually increasing symptoms of stricture. Two years ago had temporary retention; and for several months has passed his water by drops, with great difficulty and straining. On his admission was suffering intensely from distended bladder, and the fruitless efforts which had been made to introduce an instrument. After much trouble, a small catheter was passed into the bladder and retained until the next day.

May 24. Total retention, with great distension and distress. The urethra was too much disorganized by previous manipulation to allow of any further attempts at catheterism, and I therefore punctured his bladder. He retained the canula until May 30, when I was enabled to pass a small elastic catheter through the urethra.

June 13. The urethra readily admits a moderate sized catheter, but the bladder has in great measure lost its contractile power, from habitual over-distension. To remedy this his water was drawn off daily. In a few days his bladder regained its tone, and he left the hospital, perfectly well, June 18. I saw him about a year afterwards, and learnt that he had continued free from all symptoms.

Case 5.—J. H., aged 39; admitted into Guy's Hospital, June 25, 1847. Had suffered from stricture many years. Had retention ten years ago, and was probably much injured by unsuccessful attempts to pass an instrument. On his admission his bladder was by no means distended, but the intolerance was extreme, and he passed his water in drops with great difficulty.

The usual palliative treatment, combined with instrumental means, was adopted and continued for a fortnight, at which period (July 8) he first came under my observation. He was then enduring great agony; and although there was neither distension of the bladder nor actual retention, I judged it advisable to give him relief and supersede any further attempts on his urethra by puncturing through the rectum. The bladder only contained about eight ounces of urine; and although the operation at once relieved the intolerance and distress, he continued to suffer from dull, heavy, severe pain about the perineum and rectum. This, however, in a few days became relieved after a free evacuation of the bowels, and at the same time the expulsion of a quantity of grumous coagulated blood from the urethra, no doubt the product of previous violence.

July 14. The canula, which had become coated with calculous matter, and was producing great irritation, was now removed. During the next two weeks, he passed his water principally through the rectum, but also in an improving stream through the urethra; the recto-vesical puncture acting as a safety valve through which the urine gushed out whenever there was any urethral obstruction, or when he strained forcibly to micturate. I now introduced a small bougie into the bladder, and the

case readily yielded to ordinary gentle treatment, until he left the hospital quite well, August 17.

[Mr. Cock now relates 38 cases in which perfect success followed the operation of relieving the bladder by puncturing it through the rectum, and which also he believes in many cases to have materially tended to the restoration of the patient, by the less degree of suffering induced, and by the more speedy and effectual relief it afforded. To this paper, in August, 1852, he adds the following postscript:]

The trocar and canula which I am in the habit of using for puncturing the bladder, are essentially similar to those which have been hitherto employed for that purpose; but I have found it advisable to increase their dimensions in length and thickness. I have also added a blunt-pointed or pilot trocar, which very much facilitates the introduction of the canula into the rectum, and its adaptation to the precise spot

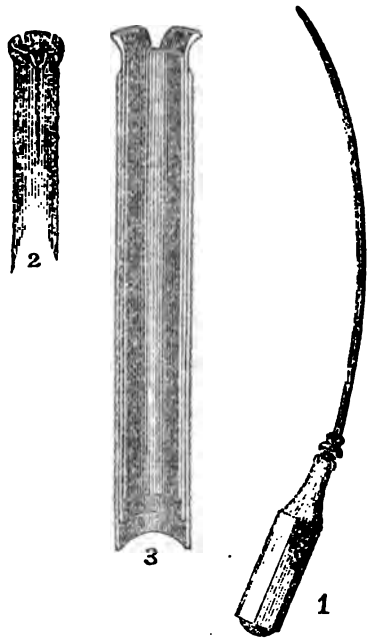


Fig. 1, represents the trocar;—the size reduced.
2, the canula with its two internal tubes in situ.
3, an enlarged section of the same.

intended to be pierced. I likewise found it necessary to adopt some contrivance which should retain the canula in the bladder during change of position or evacuation of the bowels, and which might at the same time prevent the sharp extremity of the instrument from wounding or irritating the lining membrane of the viscus. This double object has been fully accomplished by the introduction of a second tube split at its extremity into three expanding branches, each of which is furnished with a small bulb, and form together a button-like projection at the end of the first canula. A third tube is then introduced through the second to secure it in its place and to prevent the collapse of its branches.

With this apparatus the canula may be retained in the bladder for as long a period as occasion may require.

A small disc of caoutchouc around the second and third tubes, and a plug of gutta percha, render the entire instrument water-tight, when it is considered desirable to allow the urine to accumulate in the bladder.—*Medico-Chirurgical Transactions*, 1852, *p.* 153.

99.—ON A NEW FORM OF DIRECTOR FOR THE REMEDY OF STRICTURE BY EXTERNAL INCISION.

By Prof. Syme, Edinburgh.

[Mr. Syme states that he has now operated upon eighty cases of obstinate stricture by external incision, without in any case a fatal result ensuing. He thinks the danger of the operation cannot be urged, therefore, as a plea against it. Certainly, in his earlier cases the disease returned, but he is now satisfied that it was from the incision not being sufficiently free by dividing the whole extent of the contracted part of the canal. He now proposes a modification of the apparatus, which he believes will insure the permanent latency of the canal. He observes:]

So long as an instrument employed to explore the urethra does not pass through the stricture, it distinctly determines the seat of obstruction; but so soon as its point gets fairly beyond the contraction, unless there should be a perceptible thickening of the canal, which seldom occurs, except in its anterior part before the scrotum, there is no longer any trace of the stricture that can be detected by the most careful examination, even after the coverings of the urethra have been divided. Hence no doubt the long cherished, and still not entirely abandoned, errors, in regard to the situation of strictures, and especially the mischievous delusion of their occurring at the "neck of the bladder," in the membranous portion of the urethra, or at any point behind the bulb. Hence also the difficulty which has been experienced in passing catheters, after it seemed that the stricture was freely divided; and hence also, no doubt, the imperfect results of some operations performed by myself and others.

Having long experienced the inconvenience attending this uncertainty as to the precise seat of the stricture at the time of operation, I tried the effect of slipping a piece of elastic catheter over the director, so as to leave it exposed three inches from the point, and thence covered up to the handle. As this contrivance was found to answer the purpose in view completely, I had a solid steel director made of the same form, and I may now explain the mode of using it. The slender part having been passed through the contracted part of the canal, the director is confided to an assistant, who keeps it steadily pressed down upon the stricture with one hand, while he holds up the scrotum and penis with the other. The operator then cuts through the integuments and subjacent textures until he distinctly feels the guiding instrument, when ascertaining at once where the stricture is seated, he inserts his knife in the groove at least an inch below the thick part, runs it forward to the termination, and then, taking the director in his left hand, withdraws it, together with the knife, still held at the extremity of the groove, so as to divide the strictured part completely, which is shown by the thick portion of the instrument freely passing the seat of its previous obstruction, when urged towards the bladder. If the operation has been properly performed, the catheter is then passed with the same facility as in a perfectly sound urethra. During the two months that have elapsed since the adoption of this contrivance, I have employed it in six cases.—*Monthly Journal of Med. Science, Aug.*, 1853, *p.* 175.

[In a letter to the editor of the 'Medical Times and Gazette,' Dr Henry Dick observes that though he sincerely admires the skill and success of Mr. Syme in his operation, he yet thinks the subcutaneous incision would render it still more simple. Hoping to dwell larger upon it at another time, he scarcely more than alludes to it now. He relates the following case:]

A young Italian was under my care for a stricture in the membranous portion of the urethra. I explored the canal, and examined the form of the stricture after the method of Ducamp; I then passed a caoutchouc catheter with its stilet No. 1, and succeeded in passing it through the stricture; but my patient had not the opportunity of remaining long enough in England to enable me to cure his stricture by this slow method, and, having heard of Mr. Syme's operation, was anxious it should be performed: I yielded in part to his wish. Having placed my patient in the position as for lithotomy, and having passed a grooved sound through the stricture with a scalpel, I divided the skin, making a very small opening, and in the same manner the urethra. I then introduced into the opening of the urethra a small curved tenotome, and without further division of the integument, divided the stric-

ture from before backwards. Lastly, with the sound, I assured myself that the stricture was perfectly divided. This operation is readily imitated on the dead body. A curved needle and thread may be passed around the urethra, beneath the skin, the needle being brought out at the point of entrance. Thus, a loop will be formed, which, being tightened around a grooved staff, will perfectly represent a stricture. I term this operation subcutaneous, because it is in reality so. After the operation, the catheter was not left in the bladder, but passed when required to empty the bladder. After its use, warm water was injected. I preferred this mode of treatment for the following reasons:—When the catheter is left in the bladder, some drops of urine will dribble along it to irritate the wound. Those who have operated for laceration of the perineum know that cicatrization is prevented, and ulceration produced by contact of the urine. Mr. Baker Brown places his patient on the knees and hands during the catheterization, to prevent the urine coming in contact with the wound. By the introduction of a catheter well adapted to the urethra, and by injection of water, I endeavour to prevent the contact of urine with the wound. The small external incision heals almost by the first intention. As to the interior wound, I would not hazard an opinion as to the time of its closure; after six weeks, however, my patient had neither pain nor difficulty in micturition; nor was there at this time sensible trace of the stricture on using the catheter. I therefore presume cicatrization to have been, then, complete. Future observation will prove which operation is the best, the subcutaneous incision or that of Mr. Syme. It will, perhaps, be objected, that, to pass a catheter daily, would cause irritation, and prevent cicatrization, or, perhaps, lacerate the urethral wound. I would reply, that the urine in passing through the urethra is a foreign agent, charged with its proper salts, which produce irritation, far different to that of a well adapted metal catheter.—*Med. Times and Gaz., May* 28, 1853, *p.* 559.

100.—CASE OF URIC ACID CALCULUS, WHICH APPEARED TO HAVE BEEN DISSOLVED IN THE BLADDER BY ALKALINE REMEDIES.

By F. A. Bulley, Esq., Surgeon to the Royal Berkshire Hospital.

[On November 15, 1847, the patient, a delicate-looking, scrofulous boy, was admitted into the hospital for symptoms resembling stone in the bladder, which had increased in intensity during the previous six months. The disease had been about three years in its duration. The urine contained a whitish gritty sediment, and much tenacious mucus. He had neither pain at the end of the penis, nor sudden stoppage of urine, but his previous medical attendant had satisfied himself of the presence of stone in the bladder. Mr. Bulley proceeds:]

An examination which I now made with a metallic sound, left me no room to doubt the nature of his complaint, the unmistakable feeling of a stone in the bladder being clearly perceptible; and the patient was, therefore, other circumstances being favourable, admitted as a fitting case for the operation of lithotomy. Having, however, just previously become acquainted with the particulars of a case of stone which had apparently been dissolved by the employment of saline medicines, which, I understood, had been procured from a person living somewhere in Warwickshire, and having, principally through the kindness of my friend, Mr. Adams, of the London Hospital, succeeded in obtaining a knowledge of the probable composition of the remedy, which I was told was generally known by the name of "Constitution Water," I determined to employ some analogous preparation in the present case, although, I must confess, but with little hopes of success.

Taking for granted that the gritty sediment, which had been occasionally observed in the urine, was principally composed of lithic acid, and having no doubt that the stone was formed of the same material, and, moreover, as the boy seemed, from his general symptoms, to be the subject of the lithic acid diathesis, which I supposed to be the only constitutional condition likely to be affected by solvent remedies of any kind—I ordered him to take the following powder, dissolved in half a pint of tepid water, twice a day, strictly enjoining him to take no other kind of fluid, with the exception of a glass of rain-water whenever he might feel thirsty, which being frequently the case from the salt drink, he generally took from a pint and a half to

two pints, and sometimes more, during the day; the use of vegetable food was strictly prohibited:

℞. Potassæ bicarb. gr. x.; sodæ carb. gr. xij.; potassæ nitratis gr. viij.; Ft. pulv. To be dissolved in a tumblerful of tepid water, and taken twice a day.

As his skin generally appeared to be habitually dry, and secerning very imperfectly, and as the cutaneous capillary circulation was extremely languid, I ordered his body to be sponged daily with tepid water, followed by dry rubbing; and he was made to walk briskly for an hour or two in the hospital garden twice a day.

He continued this treatment, with occasional interruptions from disorder of the bowels, for about a month, at the end of which time it was found that he had lost, in a great measure, the irritability of the bladder under which he had previously been labouring. Considerable quantities of thick gritty matter had been at times observed in his urine, which, upon examination, were found to consist of amorphous lithic acid, with some mucus, but not nearly so much of the latter as he used to pass before he came to the hospital.

His general health had improved in proportion; and, notwithstanding the occasional diarrhœa to which he had been subject, he had gained strength and flesh, and his skin had become habitually moist and perspiring, which had not been the case for a long time previous to admission; and he appeared to be gradually losing the symptoms of his disease.

February 3, 1848.—He has been gradually improving in his health since the last report; he has now almost completely lost the irritability of the bladder, and he passes his water, which is still, however, thick at times, without pain or inconvenience. He was, therefore, discharged from the hospital, with directions to continue the treatment some time longer.

April 16, six weeks since his discharge from the hospital.—He says he now feels no pain, either in making water or after doing so; he sleeps well at night, and is not obliged to get out of bed oftener than any other boy in health; he looks better and feels stronger, and goes to farm work regularly every day without inconvenience. I now carefully examined the bladder with a variety of instruments, but failed in detecting the stone; but there was a kind of hard, gristly feeling of the lining membrane, near the fundus, on rotating the instrument, such as is not uncommonly met with in a bladder which has been for any considerable time under irritation from the presence of a calculus. He was ordered to take the medicine only once a day for a short time longer.

April 18, 1850, two years and two months from the date of his discharge from the hospital, I received the following communication from the patient's mother:—"With pleasure I inform you that my son Henry is perfectly recovered." I have, since this, had no opportunity of ascertaining whether or not he has had any return of the disease.

Speaking of the so-called "Constitution Water," Dr. Golding Bird remarks:—"There can be no question of the advantage that has resulted, in some cases, from the use of this remedy, nor, on the other hand, can there be any doubt of the injury it has inflicted when improperly administered. The secret of its success in uric acid gravel (the only class of cases in which it should be employed) depends upon the large quantity of alkaline salt administered in twenty-four hours. Our doses are generally too small when alkalies are administered in such cases. I certainly owe the knowledge of this fact to some successful cases of the so-called 'Constitution Water.' I do now constantly prescribe, with very great advantage, especially in cases of pisiform uric acid gravel, in which patients will pass scores of calculi, of the size and appearance of mustard seed, at a time, in imitation of this preparation, from two to four drachms of bicarbonate of potass dissolved in thirty or forty ounces of water in the course of twenty-four hours."—*Med. Times and Gazette, June* 11, 1853, *p.* 600.

101.—*Collodium in Cases of Inflammation of the Epididymus.* By Dr. LANGE, of Konigsberg.—Collodium, which Dr. Pinchaud ("Arch. Gen.," Sept. 1852) recommends as extremely useful in arresting incipient erysipelas, by causing contraction of the vessels of the skin when applied externally, has been employed at Konigs-

berg by Dr. Lange, in cases of inflammation and swelling of the epididymis. Although he is in favour of cauterization of the scrotum with nitrate of silver, as a remedy in this affection, yet the cure is generally tedious, and the caustic requires frequent repetition. It is from these reasons that he was induced to try pencilling the scrotum with collodium, and, in five cases, he witnessed such favourable results, that he was induced to continue the practice. In three cases, a single application sufficed, and recovery took place in three, four, and six days. In the fourth, a patient, aged forty-one, addicted to onanism, suffered from swelling of the left testicle for six weeks, with slight œdema of the scrotum. He was cured in seven days, after two applications. In the fifth case, the patient had suffered from orchitis for six months; he was cured in eleven days, after three applications. Collodium was also found useful in erysipelas of the lower extremities, but not when applied to chancres or sore nipples.—*Med. Times and Gazette, May* 14, 1853, *p.* 506.

102.—*On the Diagnosis and Treatment of Hydrocele.* By E. Stanley, Esq., F.R.S.—[After reciting some cases, Mr. Stanley alludes to a simple contrivance to facilitate the examination of hydroceles, as to the transmission of light.]

The ordinary plan of taking the patient into a dark room, and holding a candle on one side of the scrotum, is troublesome, and does not always succeed. By looking through a tube, however, the end of which has been firmly placed on one side of the tumour, the experiment is much simplified, as common daylight will serve, and, by the exclusion of all extraneous rays of light, several sources of fallacy are avoided. Such a tube may be constructed extempore, by rolling up a sheet of paper, or a stethoscope will serve the same purpose admirably.

By far the most common method for the radical cure of hydrocele, which we see resorted to in the London hospitals, is that by the injection of the tincture of iodine. At St. Bartholomew's, Mr. Lloyd is in the habit of using the ointment of the nitrico-oxide of mercury for the same purpose. Having evacuated the whole of the fluid, he introduces through the canula a probe, the point of which has been thickly smeared with that ointment, and moves it about in the interior of the sac. The plan appears to succeed very well. In the majority of cases which come under his care, Mr. Wormald prefers to resort only to the palliative treatment by acupuncture. From twelve to twenty stabs with a full-sized needle are made in different parts of the tumour, the fluid contents of which escape into the cellular tissue of the scrotum, and are absorbed in a few days. The advantages of the plan appear to be, that it involves neither pain, loss of time, nor the slightest risk of any ill consequence. Its disadvantage, of course, is, that it requires to be frequently repeated.—*Med. Times and Gazette, June* 18, 1853, *p.* 629.

SYPHILITIC DISEASES.

103.—ON THE TREATMENT OF BUBO.

By John L. Milton, Esq.

[In 1850, Mr. Milton published in the "Lancet" a paper on the "Use of Tartar-emetic in Inflammation of the Cellular Tissue." Soon after, a pamphlet was published for private circulation only, with the results of this treatment in bubo and perineal abscess. Mr. Milton now mentions it in a more public manner. In the pamphlet alluded to, he stated:]

1. That bubo, in its mildest form, is rapidly cured by small blisters.

2. That in the acute form no effort should be spared to obtain resolution, which may in general be readily effected by full doses of tartar-emetic, as one grain over two or three hours, and the application of very hot water to the bubo.

3. That when resolution is effected, the hardening and engorgement may be removed, as in the indolent bubo, by iodide of potassium, aided by blistering, and the subsequent employment of tincture of iodine, friction *in every form* being *injurious and painful.*

4. That when resolution cannot be effected, the best plan is to evacuate the pus by means of a needle introduced through the sound skin or at the lower side of the red halo which points out the seat of inflammation.

5. That when a bubo is not submitted to the surgeon's care till it has burst, it seems better to treat it by irrigating the surface freely with warm water, than by the direct application of stimulants, which are more painful and not so efficient.

6. That absorption of the indolent bubo may generally be effected by the use of tincture of iodine, blisters, and iodide of potassium.

I also directed attention to the facts, that the ordinary modes of procuring resolution frequently fail; that promoting suppuration, where it can be prevented, seems of questionable benefit; that cutting a bubo sometimes fails to check the advance of suppuration, while it has often been followed by the most serious results, and even by loss of life; that burning it with caustic is frightfully painful; and, finally, forming large sloughs, as recommended by Malapert, Cullerier, and Ricord, is equally barbarous and unscientific.

Such were the opinions I ventured to put forth in the pamphlet I have spoken of, and before the reader has concluded the present article, he will see that I am now labouring to extend and improve this treatment, and striving to force home the conviction that the knife ought to be totally laid aside in these affections.

Let me then call attention to—

a. The disadvantages attending the ordinary treatment of bubo, and especially *of allowing the air to come in contact with the suppurating cavity;*

b. The advantages attending an opposite plan of treatment, more particularly that of *drawing off the pus as soon as its presence is detected;*

c. And to any objections which have been, or might be urged against this plan.

a. I believe few surgeons will attempt to controvert the statement that the ordinary means of treatment frequently fail in effecting resolution in bubo. I am not the only person who has expressed an unfavourable opinion of their efficacy, and it would be an easy but superfluous task to find in surgical works, arguments not only against the sum total, but even against each separate item of the usual treatment. Now, when resolution cannot be effected, a bubo must either burst or be opened.

If the former take place, there is a large suppurating cavity, which takes a long time to fill up again, throwing out for weeks a profuse discharge: a constant source of annoyance and discomfort to the patient, and ending in an ugly scar.

If opened, so as directly to expose the seat of suppuration to the air, it rapidly passes into nearly the same state. The edges of the opening ulcerate till there is a wide gap, entailing the same distressing consequences—suppuration and its attendant filth, confinement for weeks, and an ugly scar.

Should a small opening be made with the view of avoiding unnecessary pain, sinuses almost inevitably result, more particularly if the opening be not made in the lowest part of the swelling. Weeks and months may elapse before these heal, and often very severe measures have to be resorted to, not unfrequently with indifferent succes. Buboes have even been pricked on the summit with a needle to evacuate the pus, but in the cases I have seen treated in this way, the opening remained a small, sharp-edged, circular hole, while beneath the skin, the suppuration went on unchecked till a large opening was made by nature or by the surgeon.

Had such an opening been made in the lowest part of the swelling, it would have been a considerable improvement on the old plan, as here the pus would have drained away as it formed, and thus the destructive effects which result from its being confined might have been avoided. But the most prominent part, where the skin was thinnest, was selected, so that though tension was relieved, the bubo soon filled again with pus, which pressed on the cellular tissue on all sides, and burrowed far and wide. If any attempt were made with a common needle to open the bubo at its lowest part, either no pus would be got away, or else a wound be left incapable of healing by the first intention. In an abscess seated in parts where no dependent position can be obtained, it would be of no use.

[The treatment by puncture might fail, though Mr. Milton has never known it do so. Mr. South has been equally successful.]

But to be efficient, the lance-headed needle, such as was first recommended by Dieffenbach in his plastic operations, is indispensable. It should be firmly mounted in a handle, and the point should be as sharp and well-tempered as that of a cataract

knife. It should be inserted into the sound skin at the lowest point of the swelling and pushed up to the pus, and as it is withdrawn, if the bubo be gently pressed, the pus will flow out. After this the opening should be thoroughly cleansed from any pus and closed. If any blood ooze out, it may safely be left adhering: blood is nature's styptic, and the best. The puncture should then be covered with isinglass plaster, collodion, or lint firmly secured; for one of the greatest points is to procure its perfect closure, and on no account should the same puncture be re-opened.

Now, in slight cases, when there is not a large accumulation of pus, if after the second, or, at farthest, the third, puncturing, the needle be again introduced, little or no pus can be obtained, but in its stead a fluid like lymph, or sometimes like synovia. In more severe cases this does not appear so early. Meanwhile the swelling, pain, and redness abate, thus showing that the whole inflammatory process has been profoundly modified, and that it is giving evidence of a tendency to revert to the second stage, or that of effusion.

When the surgeon is bent upon succeeding, he will soon find that it is necessary to "tap" the bubo as fast as it is re-filled. Although each successive puncturing produces a diminution in the quantity of pus, it must still be diligently repeated till this is *all* eradicated. I have repeatedly seen my attempts at a cure in some degree nullified by the patient's staying away in consequence of the momentary relief afforded him. Last February, a patient placed himself under my care with chancre and bubo. He was a most inflammatory subject, and a free liver. His bowels were obstinately confined, and it was not till he had taken ten grains of calomel and six ounces of sulphate of magnesia that they were opened, while the tartar-emetic produced little or no nausea till the dose was raised to one grain and a half every three hours. Partly, perhaps, in consequence of this strange inertness of the stomach and bowels, pus formed. I drew it off on the 10th of March, and instead of returning the next day to have it done again, he quietly allowed it to burst. Fortunately, however, the puncture re-opened, owing to the friction, for he neglected to put anything over the bubo, and the pus drained away as it was formed. The result showed the advantage of having the opening at the lower part of the swelling, for while scarcely any matter found its way out by the point where it had burst, and though he took a good deal of pains to mar the cure by utterly neglecting it and giving way to intemperance, yet there was no burrowing; the bubo soon shrank, and the opening below, which had ulcerated to about the size of a sixpence, closed up last of all.

The officiousness of some patients is an evil equally to be guarded against; they will re-open the puncture to squeeze a little more matter out, and then it never heals by the first intention. Last March, a man applied to me with an abscess in the back of his left hand, which he had previously pricked on the top, without however finding the benefit he expected. I opened it with the needle, and closed it up. On the third day it seemed nearly well, but the same night on looking at it he thought it had filled again; he therefore squeezed the lump till he forced pus out of two of the punctures. Daily removal of the matter soon cured the abscess, but the sinuses he had made took a month to heal.

I need not dilate either on the safety or the simplicity of this plan of treatment, for it is perfectly harmless, and as simple as the most *practical* of men could desire.

I have extended the plan of puncturing to abscesses of other parts, and I may safely say, with the best results, especially in respect to those seated in the neck and axilla.

Thus, in the autumn of 1852, two young ladies were placed under my care, suffering from abscess of the neck. The first case was extremely severe, and occurred in consequence of scarlet fever. The abscess extended along the under margin, and on the left side of the lower jaw, and was red, prominent, and on the point of bursting. By immediately emptying it, and repeating this process daily, not merely were the sufferings of the patient quickly relieved, but deformity was avoided, and I am not convinced that it did not afford her the means of escaping from some necrosis of the jaw. The other case was exactly similar, but much slighter, and ccurred in a healthier patient.

Puncturing has also the advantage that it may be used where the knife would be angerous, or would not be permitted. The abscesses which attack the hand in evere weather, and which were particularly numerous last February and March, ixing upon the insertions of the great flexor and extensor tendons, were often allowed

to go on till the joint near them was totally destroyed, because the patient would not suffer them to be lanced. But I have found very few object to the use of a needle, and if daily employed will often relieve cases which incision has failed to check.

The vagueness which prevails as to the indications for applying hot fomentations or cold lotions to swellings of this kind, induces me to offer a suggestion respecting their employment.

When there is much pain, hot water may be safely trusted to relieve it. When there is more heat and redness than pain, the evaporating lotion may take its place. When both heat and pain are present, hot water and cooling lotions may be used. This may appear paradoxical, but I have found the best results in practice from bathing bubo, and even mere axillary abscess, three or four times a day, with almost boiling water, and then covering it with a single fold of linen, on which the evaporating lotion was continuously sprinkled.—*Lancet, Sept.* 10, 1853, *p.* 239.

104.—*The Seton for Suppurating Bubo.*—M. Bonnafont, chief surgeon of one of the military hospitals of Paris, has lately proposed to supersede the ordinary modes of opening buboes by the following method: A seton, of a very few threads, is passed through the bubo in the direction of its long axis, and left for several days, until a kind of fistulous tract is established. The thread is then removed, and the purulent matter escapes by the small apertures, either spontaneously or by pressure. The advantages of this practice are, according to the author, the avoidance of the unsightly puckered cicatrix generally left when incisions are made, and the more rapid healing of the bubo.—*Lancet, July* 2, 1853, *p.* 8.

105.—*Bubo.*—Dr. Clairborne (Amer. Journ. of Med. Sc., April) applies *collodion* over a bubo when there is not much local inflammation; the collodion is applied layer after layer, until considerable compression is produced. If there be any amount of inflammation, leeches are previously applied.—*Brit. and For. Medico-Chirurgical Review, July,* 1853, *p.* 279.

106.—*Chordee.*—M. Doringer (Rev. Méd. Chir., xiii. 240) relates a case of chordee, in which, after trying all the usual internal remedies in vain, when the penis had become relaxed by means of cold, he covered the organ with a thick layer of *collodion*, with the effect of completely preventing the erection. Next day, however, when the collodion was removed, the erection returned.—*Brit. and For. Medico-Chirurgical Review, July,* 1853, *p.* 279.

107.—*Gonorrhœa.*—M. Alquie (Bul. de Therap., xliv. 277) speaks in the highest terms of the great utility of the tannate of zinc (1 part to 100 of water) injection employed, night and morning, in gonorrhœa, after the acute symptoms have subsided.—*Brit. and For. Medico-Chirurgical Review, July,* 1853, *p.* 281.

108.—ON THE CURE OF GLEET AND OBSTINATE GONORRHŒA.

By John L. Milton, Esq.

[In this paper, Mr. Milton renews the subject of the treatment of gleet. In vol. xxiv. a paper upon the same subject will be found.]

Gleet has been divided and subdivided into many varieties—rheumatic, gouty, scrofulous, dependent on an atonic or varicose state of the vessels, arising from induration or ulceration of the urethra; and in a systematic work on the subject these divisions may, no doubt, be adopted with great advantage; but in a paper

professing solely to treat of means of cure, it will, I think, suffice to consider gleet under the head of

a. Gleet dependent on structural change in the urethra or incipient stricture;

b. Gleet not dependent on this state, or in which this state is not recognisable;

c. Gleet arising from a disordered or diseased state of other structures, as the testicle, prostate gland, &c.

When a case of gleet comes under treatment, and nothing is found to raise any suspicion of stricture, I should in all cases be disposed to try injections of nitrate of silver, rising gradually in strength every day, so as always to produce a slight sensation of heat in the urethra. I have never found it necessary to use them weaker than gr. i., or stronger than gr. x. to ʒj.

But to do this properly, the pipe of the syringe must be at least two inches long. When a syringe of this length is used, it will often be found that the tip encounters very sensitive spots, especially on the lower surface of the urethra. According to my experience, so long as these persist the gleet will not give way.

Along with an injection of this strength, such a dose of rhubarb and potass. acetas may be given every morning before breakfast as will act twice a day on the bowels. The less medicine, however, the better; patients with obstinate gleet are generally tired of it, and will rather allow the disease to run on than again go through the routine of pills, mixtures, draughts, &c.

In many cases this treatment produces immediate and permanent relief; in some the relief is only temporary, and the complaint soon begins to return; in others very little change seems to be effected.

In the two latter classes of cases, if there be, at the end of eight or ten days, really no fair prospect of a cure, the urethra may at once be sounded. If a stricture should be found, it is needless to say, that we must have recourse to the bougie, and that the case ceases to be one of pure gleet.

There is a state, apparently stricture in the incipient stage; it might be called the granular urethra:—The canal feels rough, and, in some places, slightly narrowed. There is pain on passing the instrument, and an obstinate purulent discharge never entirely absent. Blistering seems to be of little avail; caustic seems to have little control over these cases; and the only remedy I know of is, the persevering use of the bougie. But if only pure gleet, sometimes mucous, sometimes purulent, be met with, it will, in almost every case, yield to a blister; very rarely does it ever require a second. Blistering is, I may now safely say, the safest, quickest, and most efficacious remedy of all that have ever been proposed. Those who have had numbers of these cases under their hands, and felt the constant disappointment which the use of every other remedy brings with it, will soon appreciate its value.

I have heard it condemned, as a violent, painful, unpleasant remedy. I deny it. Apart from the fact, that it is neither so violent nor so painful as many other remedies which have been employed (though this would not be saying much for it), it is not so unpleasant as many remedies which good surgeons constantly employ, such as cauterizing the urethra, a remedy laid down on high authority; and, what is more, I deny that, with ordinary care, and in ordinary cases, it is either very violent or very unpleasant.

I appeal to the results of experience, to the fact, that, while it has never failed in a case of gleet uncomplicated with change in the urethra, it has never, in any case, produced any disagreeable results, except a few boils. I appeal to the fact that patients cured by it, of gonorrhœa and gleet in all stages, have, on being a second time infected, of their own accord, blistered themselves or come to me a second time to be blistered.

Why should surgeons hesitate to blister in gleet? They do not hesitate to blister the vicinity of the eye,—the face itself. Parts of the frame, equally as tender, are constantly blistered as a matter of course: why not the vicinity of a gleet?

Why should it not cure gleet? Does any remedy act so efficaciously in many chronic discharges? Why should not gleet yield to it? Has it ever seriously entered the head of any one, in the habit of observing, to dispute its value in these cases? Then why here?

After this peroration, let us come to the employment of it. For the mode of

applying the blister, let me refer the reader to my paper in the "Medical Times." (See RETROSPECT, vol. xxiv., p. 361.)

For three or four days after the application of the blister, the quieter the patient is the better. So soon, however, as the blistered surface begins to heal up, a few mild injections may be given. The best kind have always appeared to me to be those of sulphate of zinc, in the following form:

℞. Zinc. sulph. gr. x. ad ℥j; sp. camph. ℥xx.; aquæ distil. ℥j. A teaspoonful to be used three times a day.

Here, as in every stage of gonorrhœa, the bowels should be kept gently open; the diet should be light; quiet and abstinence enforced. Under this treatment, a cure is frequently effected in six days from the first employment of a blister, often in less, and occasionally, in some long standing cases requiring a second blister, it has extended over a fortnight.

The cleanest, most painless, and most certain plan of blistering seems to be that with Mr. Brown's blistering tissue. This chemist has also invented a dressing tissue which is extremely cleanly and convenient. It is highly desirable that some such process should be extended to the oxide of zinc. What a step in the right direction since the days of Cirillo's filthy and painful blistering ointment of corrosive sublimate!

Now and then it will happen, that the patient is mortified and surprised to find the discharge re-appearing at the very moment he thought all gone. Thus, on the third day, there may be no discharge, and on the fourth there is a good deal. But this generally subsides as rapidly as it appeared, if the patient will only be quiet, and abstain from tampering with it.

Whatever means be adopted, the complete extinction of the disease must be made a *sine quâ non*. From the time of Jesse Foot—perhaps earlier—it has been an admitted fact, but not always acted on, that the cure, to be permanent, must be complete, before the surgeon remits the least in his exertions.

Finally, I may state, that, in some obstinate cases of leucorrhœa, I have used blisters with great success, but my observations are not yet sufficiently complete.—*Med. Times and Gaz., May* 21, 1853, *p.* 519.

DISEASES OF THE SKIN.

109.—ON DISEASES OF THE SKIN, WITH ESPECIAL REFERENCE TO THEIR CONSTITUTIONAL ORIGIN AND TREATMENT.

By THOMAS HUNT, Esq.

[The proximate causes of chronic eruptions may be either impaired or abnormal vascular action, or a vitiated state of the blood. In some cases we may have these combined. The following remarks apply to cutaneous diseases, uncomplicated with any disease of the viscera:]

1. There is a large class of cutaneous affections which simply depend upon impaired vascular action of the capillary system, or a generally languid circulation. These exhibit various forms of eruption, but in all of them the health appears tolerably sound, although it often happens that the bowels are torpid. Prurigo is the most common form of eruption, but lichen and ptyriasis occasionally depend on a similar cause. The distinguishing character of the eruption is that of dryness; neither serum nor purulent matter is contained in the papulæ. The general signs are a weak and slow pulse, a pallid skin, impaired appetite, and intolerance of cold and heat. The beat of the heart is generally feeble, and the respiration slow. In cold weather the extremities cannot be kept warm. Papular or scaly diseases, depending only on this state of the circulation, will sometimes yield to warm baths of fresh water, and warm aperients, with a generous diet. These failing, the chloride of arsenic I have found to be the best remedy. The chloride of arsenic is a preparation not much known to the profession, but it has long been used by a few practitioners under the name of De Valangin's "solution of solvent mineral." I had the pleasure of bringing this medicine before the notice of the profession a few years ago, in a paper published in the "Transactions of the Provincial Medical and Surgi-

cal Association," in which, on the testimony of Dr. Webster, of Dulwich, and of other practitioners, I described it as a very eligible preparation. Since then, I have had the satisfaction of seeing it introduced into the London Pharmacopœia under the cognomen "*liquor arsenici chloridi.*" I have been of late so much pleased with this medicine, that for more than twelve months past I have never once prescribed Fowler's solution, which is certainly much more liable to decomposition, and is, therefore, in some degree, uncertain in its effects. It should be noted, however, that the dose of the liquor arsenici chloridi is not from three minims to ten, as it is described in our rudimentary works on pharmacy, but from ten minims to twenty, three times a day. I have found twelve minims about equivalent to five of Fowler's solution. It seldom or never irritates the bowels, especially if administered with or immediately after a meal. It is scarcely necessary to adduce cases illustrative of this simple plan of treatment, but these are the cases in which arsenic is most useful and best borne by the patient. After a time it infuses a sense of warmth into the extremities, and a general glow over the whole surface; when this is effected, the disease more or less rapidly subsides.

2. Increased momentum in the circulation of the blood, with or without local congestion, is a more frequent proximate cause of disease of the skin than the opposite condition. The more severe forms of lepra and psoriasis, as well as of lichen, are frequently (not invariably) associated with this state of the circulation, but the more usual form of eruption is eczema. When this disease becomes unusually severe and persistent, it will generally be found that there are symptoms indicative of increased vascular action, and some degree of congestion in the larger viscera. The pulse is remarkably firm and incompressible, and remains so after a very considerable amount of depletion has been practised, which, so far from reducing the strength of the patient, very usually increases it, rendering him more lively and active, and capable of an increased amount of labour without fatigue. I am the more anxious to note this, because it is becoming the fashion to decry depletion, and many otherwise excellent practitioners use it with the extreme of caution, and appear to have no satisfactory means of measuring its amount, and adapting it to the case. It is indeed but in a small proportion of cases of skin diseases that active depletion is required. Very frequently tonics and a liberal scale of diet are the things most clearly indicated; yet there are numerous cases, especially in the order *vesiculæ*, in which the torments of the patient cannot be relieved but by a free abstraction of blood, a severe administration of purgatives and antimony, and a very restricted diet: and this system must be pursued without regard to any limits but those indicated by the pulse and the skin, and the general tone of the system. In these cases relief follows depletion, as a spring rises when a load is removed. The features, which are generally dull and heavy, and of a dingy hue, become bright and clear as the treatment proceeds, and the patient frequently remarks that he finds himself stronger on bread and water, than he was on meat and beer. During the earlier stages of the treatment the disease often becomes worse, every dose of medicine appearing, as patients express it, "to throw it out;" but it at length subsides rapidly, and gets well either spontaneously or under the influence of alteratives.

The simple principle of successful treatment consists in regarding the skin disease as not the thing to be treated, but simply as a sign of something wrong elsewhere, and when this is rectified by ordinary treatment the skin recovers immediately. The only difficulty in the diagnosis is—that the patient complains of the skin only, and requires to be questioned and cross-questioned before the real condition of the constitution can be ascertained.

It remains to be observed, that nearly all the forms of cutaneous eruption attended by the secretion and discharge of serous or purulent matter, will yield to this kind of simple treatment without arsenic, mercury, or any other powerful alterative. On this point I have seen no reason to alter the opinion I published six years ago, that, "by rectifying what is obviously wrong in the general system, we put the patient into a condition in which the local disease has a chance of getting well; and sometimes this is all we have to do; the *vis medicatrix naturæ* will accomplish the rest." These few words present the outline of all I shall have to advance in these papers; but as, by reason of their fewness, they have been overlooked by hasty readers, by whom I have been ignorantly charged with administering arsenic indiscriminately, *and with holding it out as* "a panacea in skin diseases," I deem it a duty I owe to my-

self, as well as to the profession, to illustrate by cases what it was I wished to be understood by the phrase, "rectifying what is *obviously* wrong in the general system," particularly as in that phrase is comprehended all that is requisite in the treatment of the ordinary forms of curtaneous disease.—*Lancet, Oct.* 1, 1853, *p.* 315.

110.—THE PATHOLOGY AND TREATMENT OF DISEASES OF THE SCALP, POPULARLY KNOWN BY THE NAME OF RINGWORM.

By Dr. William Jenner.

[The difficulty of diagnosing eruptive diseases of the scalp, is owing partly to their similarity to each other and partly to the different names given by different authors to the same thing. Popularly, ringworm is looked upon with the greatest anxiety and annoyance, as the term is supposed to represent a very obstinate and contagious disease.]

What is popularly meant by ringworm was by some of the older writers on skin diseases expressed by the word tinea; but the technical name being found, as our knowledge advanced, to have no definite signification, gradually fell into disuse.

It has been recently proposed to employ this word tinea again, and to give to it a precise signification. Under the generic name tinea it is proposed to include all diseases of the hairs produced, kept up, or attended, by the development of parasitic plants.

In this genus are included the following species: Tinea favosa; Tinea tonsurans; Tinea decalvans; Tinea sycosa.

It is to this genus tinea, and to these species of that genus, that I desire especially to call your attention; and I am confident that if you remember the names of the species of tinea I have just repeated, if you learn what I am about to tell you of those species, and observe well the things I shall presently show you, the remaining and more common diseases of the scalp will be mastered in a very few hours spent in the out-patient's room.

Tinea favosa most commonly affects the hairy scalp, but now and then it is found on other parts of the surface. It is characterized by thick, dry, yellow crusts, which, if small, are circular in outline and depressed in the centre, cup-shaped. Passing through the centre of each of these crusts, is a hair.

If the crusts are very large they have an irregular shape, but still they indicate their origin from distinct centres by the semicircular outline of the masses which project from their margin. These larger, irregularly-shaped crusts, are pitted on the surface, and, from their fancied resemblance to the cut surface of a piece of honeycomb, the disease has received the name of favus.

The margin of the large crusts rises considerably above the level of the cutis; internally, they seem as though half-buried in the substance of the cutis. Carefully detach the crusts from the cutis, and a distinct layer of epithelium is found below them; examine the surface of the smaller crusts, and you find a layer of epithelium cover them.

The hair, at an early period of the disease, can be pulled out from the centre of each little crust with great facility; subsequently it falls off from the diseased parts, and permanent baldness results.

The crusts, then, of tinea favosa are remarkable for their thickness, dryness, brittleness, and depressed centre. Tinea favosa is not a pustular disease, but it is said, by those who have seen much of it (it is a rare disease in London), to be often consecutive to eczema, impetigo, chronic lichen, and herpes circinatus; pustules are sometimes formed subsequently to the tinea favosa, in consequence of the inflammation excited by the crusts, and the injury inflicted on the scalp by scratching.

Tinea tonsurans is often mistaken for herpes circinatus of the scalp, with which it is now and then conjoined. It is characterized by pallor, decolorization, and brittleness of the hairs, and the presence of thin white powdery scales around the base of the hairs, and on the skin between them. The diseased hairs have been likened to "tow." "They are," Mr. Wilson says, "remarkable for their bent and twisted shape, and resemblance to the fibres of hemp in colour and apparent texture." Their

brittleness is sometimes such, that every hair on the affected spot is broken off just above the surface of the skin.

In *Tinea decalvans* the hair falls out rapidly from one or more circular spots, leaving a smooth bald surface. There is no eruption of any kind,—no crusts, no scales.

Tinea sycosa is characterized by inflammation of the hair follicles. Sometimes the inflammation leads only to the effusion of serosity, and the exudation of lymph around and into the capsule of the hair. At other times, and more commonly, pus is formed, and then, when the pustule breaks, a brownish scab is formed on the surface. The usual seat of tinea sycosa is, the chin, upper lip, and sides of the cheek. I had a case lately under my care in which the pustules occupied the inner surface of the nares,—that part from which the hairs spring that protect the orifice of the nose. Tinea sycosa rarely occurs on the scalp, and it does not spread circularly; so far as I know, the name of ringworm has never been applied to it. I mention it to you to-day, although I have no example of it among my patients to show you, because of its relation to the species of tinea of which we have examples before us.

You will have remarked, then, from the characters of the species of tinea I have mentioned, that—

Tinea favosa is especially characterized by its crusts.

Tinea tonsurans is especially characterized by decolorization and brittleness of the hair.

Tinea decalvans is especially characterized by baldness, not preceded or accompanied by an eruption.

Tinea sycosa is especially characterized by inflammation, tenderness, hardness, and suppuration of the hair follicles.

I told you that these diseases are arranged together in one genus, because in all a parasitic plant is developed in connexion with the hairs. Now, the plant present is different for each species of tinea; and the situation occupied by the parasite is also different in each species of that genus.

In tinea favosa, the parasite is the *achorion Schönleinii*. This plant has mycelium, sporule-bearing branches, and sporules. The sporules are round or oval, and their diameter varies, according to Gruby, from 0·003 mm. to 0·01 mm.

The vegetable growth is first perceptible between the layers of the epithelium, just at the orifice of the hair follicle; from this point it may spread downwards between the hair and its capsule, and upwards around and in the substance even of the hair.

Such of you that visited ward 4 during the time Jacobs was in the hospital, had frequent opportunities of seeing the mycelium, the sporule-bearing branches, and the sporules of the *achorion Shchönleinii*. You will recognise it in these very excellent drawings of Robin.

In tinea tonsurans, the parasite is the *trichophyton tonsurans*. This plant is composed of spores only; the spores, however, are occasionally somewhat elongated, and arranged in a linear series. They are round or oval, and their diameter varies from 0·003 mm. to 0·01 mm.

The primary seat of the trichophyton tonsurans is the root of the hair; subsequently, it extends up into the substance of the hair, and even outwards, according to Bazin, on to the skin between the hairs. I have under the microscope some hairs removed from the head of one of these children. You will see in one specimen the spores in the hair follicle; and, in another, the hair split up with the spores among the fibres, as figured in this plate by Bazin, and in this more highly magnified drawing by Robin.

In tinea decalvans, the parasitic vegetable is the *microsporon Audouini*. This plant is formed of branch filaments, on which the spores are developed. The spores are very small—from 0·001 mm. to 0·005 mm. The seat of the growth is the outside of the hair; it forms a sort of sheath around the hair, from the surface of the skin upwards, from 1 mm. to 3 mm. Gruby first described this plant, and its relation to tinea decalvans; and Robin says, he can confirm the accuracy of Gruby's description.

In tinea sycosa, the parasite is the *microsporon mentagrophytes*. It is also composed of filaments and spores; but the spores are larger, and the filaments broader, than those of microsporon Audouini.

The seat of the growth is the hair follicle between the hair and the capsule.

I have told you the names I would have you employ to signify the diseases I have described and demonstrated to you; but you ought also to know the names employed by the writers on skin diseases most popular in this country, to signify the same things.

Tinea favosa, then, is called Porrigo favosa by Willan and Bateman; Favus by Dr. A. T. Thomson, Simon, and many other writers.

Tinea tonsurans is called Porrigo scutulata by Willan, Bateman, and Dr. A. T. Thomson; Herpes tonsurans by Cazenave; and Trichinosis furfuracea by Mr. Wilson.

Tinea decalvans is called Porrigo decalvans by Willan and Bateman; Vitiligo of the hairy scalp by Cazenave.

Tinea sycosa is called Mentegra by Willan and Bateman; Sycosis by Mr. Wilson.

As to the etiological relation of the parasite to the disease, it appears, that the spores of the vegetable growth require for their development a peculiar nidus. I say so, because all persons who mix with children suffering from tinea do not have the disease. But if a soil highly favourable to their growth exists, then a spore having found its way on to that soil develops and forms other spores, and so the parasite spreads over the surface of the individual more or less rapidly, according to the more or less favourable nature of the soil.

[As tinea commonly appears amongst strumous and dirty children, we must first in the treatment enforce cleanliness, then strengthen and improve the general health of the patient, and then endeavour to destroy the parasite. The two first intentions are to be fulfilled on common principles, the last by a series of remedies termed 'Parasiticides.' Corrosive sublimate and acetate of copper have been much used, but there are many serious objections to their use, one of which is, that the hairs have to be forcibly removed from the affected parts.]

It is highly probable that, if sulphurous acid be employed as a parasiticide, epilation will be found to be altogether unnecessary to its complete action. This agent was first introduced to the notice of the medical officers of the hospital, by Professor Graham, as a possible remedy for cholera, at the time that disease was said to have its origin in the presence of an entophyte in the intestinal canal. It was first employed by myself to check fermentation, and to destroy the torulæ cerevisiæ and sarcinæ Goodsirii.* When lecturing on this subject, some time since, I expressed myself thus:—"Considerable benefit may be anticipated from the employment of sulphurous acid in all diseases attended with the development of parasitic plants. I would especially mention porrigo."

The case I am about to read to you, of Hyman Jacobs, proves, that, in regard of tinea (porrigo) favosa, these anticipations have been fully realized; while the case of the girl now in the room, and who is still under treatment, renders it highly probable that the beneficial effects of this parasiticide will be as manifest in tinea decalvans as they are in tinea favosa.

In some forms of thrush, too, I may mention that it acts most rapidly, one application of a solution of sulphite of soda (a drachm to an ounce of water) sufficing to remove the disease from the mucous membrane of the mouth in twenty-four hours. The secretions of the mouth being acid, the salt is decomposed, and sulphurous acid is set free; in this, as in all other cases, the sulphurous acid is the active agent in the destruction of the parasite.

Hyman Jacobs, aged 27 years, a Jew pedlar, a native of Amsterdam, and resident in London fifteen months, was admitted into the hospital on March 21, 1853.

He was, as most of you remember, a man of cheerful disposition, dark complexion, rather short, muscular, moderately stout; in fact, he looked generally in robust health. His habits were those of his class; he slept in the low common lodging-houses, fared badly, rarely eating meat, and, judging from his appearance, was not very cleanly in his person.

He affirmed, and I believed him, that he was temperate in regard of the use of alcoholic liquor. His general health, he said, had always been good.

The scalp affection was of nine years' duration at the time he came into the hos-

* Several medical men have lately administered the hyposulphite of soda, instead of the sulphite; but the latter is the preferable salt, and for this reason, that when the hyposulphite is decomposed by the hydrochloric acid of the gastric juice, not only is sulphurous acid generated, but sulphur is precipitated,—a substance it is very undesirable to have in the stomach in some of these cases.

pital. He had been in many hospitals, but had never derived any marked benefit from treatment. When Jacobs came under observation, his condition was as follows:—

Cerebral, circulatory, respiratory and digestive functions healthy in all particulars.

The whole of the scalp, excepting the margin, was covered with the crusts of tinea favosa. The largest crusts were of a greyish yellow colour, of the consistence of dried putty or mortar, and brittle. Their thickness generally was considerable. Where thickest, the surface of the crust was below the level of the cutis; so that it looked, at the first glance, as if the latter had been partially destroyed by ulceration. The surface of these crusts was very irregular; it had a pitted, worm-eaten, or eroded appearance. At the edge of the large, irregularly-shaped crusts, were many small circular crusts, depressed in the centre. A hair passed through the centre of each of these small crusts. When the crusts were forcibly detached from the scalp by mechanical means, the exposed surface of the cutis was very red and raw.

The head itched much; and, though scratching gave considerable pain, it was evident, from the traces of blood on the surface, that he had been applying his nails to the part.

The odour of the head was very offensive, something like that emitted by mice, only, as one of you remarked at the time, sweeter and more nauseous. Scattered over the trunk and extremities were a very large number of circular favus crusts. There were as many as forty on the back alone. The smallest of these appeared, when seen through a lens, to be constituted thus: in the centre was a hair, around and touching that a brownish-yellow crust, and around that again a dusky-red halo; the diameter of the whole not exceeding two-thirds of a line. On the back no crust was more than one-fourth of an inch in diameter; on the leg there was one one-third of an inch in diameter. These crusts were circular, raised about a line above the level of the cutis, hard, dry, and appeared as though made up of concentric rings of pale, greyish-yellow, and brown colours alternating. The surface of these crusts was readily detached, and then a cup-shaped cavity was exposed, filled with a brimstone yellow powder. The base of the crust being removed, the surface of the cutis, from which it had been detached, was raw.

We saw, you may remember, the mycelium, sporule-bearing branches, and sporules of the achorion Schönleinii, when portions of the crusts, or of the yellow powder, were placed under the microscope.

No treatment was adopted for some time after the man's admission. On April 13th his state was exactly the same as when he entered the hospital. Rags, wet with a solution of sulphurous acid, were now ordered to be kept constantly on the scalp; the head to be covered with an oil-silk cap.

On April 18th, large quantities of crust had separated from the scalp, and *those that remained attached had entirely lost their yellow hue; they were now of a dirty brown colour.* All itching of the scalp ceased shortly after the application of the sulphurous acid. No sulphurous acid had been applied to the crusts on the trunk and extremities, and they had still the characters they presented on the man's admission into the hospital.

A piece of lint, wet with sulphurous acid lotion, was applied to one of the largest crusts on the leg.

On the 22nd April a mere trace of the favus crust remained on the scalp; but the surface of the cutis was red, and there was an inflamed papula near the vertex. Thinking this condition might be partly due to the acid, which was a very strong solution, I ordered its use to be discontinued for twenty-four hours. The crust on the leg to which the sulphurous acid was applied on the 19th, had separated; the exposed surface was red, but not raw. *Two favus crusts which were seated in the vicinity of that to which the acid was applied on the 19th, were observed to be turning brown; subsequently they dropped off spontaneously.* The effect of the sulphurous acid gas on these two patches is of great interest, as illustrating the mode of action of the solution. The crusts on the scalp turned brown shortly after the acid was applied to them, and before they separated from the cutis.

On the 29th April the lotion was discontinued, and zinc ointment applied to the scalp.

On May 2nd the head was free from crusts, but the scalp was still red, and several *inflamed papulæ* were seated on it.

On May 9th the skin of the scalp was here and there more natural in hue, and one or two papulæ had suppurated; the pus was healthy in appearance, and there was no trace of the parasitic plant to be detected by the microscope.

On the 18th, the head continued free from favus; the scalp was much less red; the hair was growing. As the crusts on the trunk and extremities were still in the same state as on the patient's admission into the hospital, he was immersed, about nine in the evening, for half an hour, in a full-sized tepid bath, containing sixteen ounces of saturated solution of sulphurous acid; no friction was employed. During the night all the crusts save three fell from the surface.

On the 20th he was again immersed in the acid bath, and the next day no trace of a crust was to be found on the trunk or extremities. My notes say:—"No fresh crusts on head; a small pustule occasionally appears, and dries up in two or three days, and then disappears entirely; the skin of the head generally is much paler and more healthy in aspect."

31st. The scalp was still paler than at the previous report. There were only two small pustules on the scalp. By the microscope, no trace of the parasite could be detected. The skin generally appeared healthy; and, on June 2, Jacobs left the hospital, at his own desire, to return to Holland.

I cannot conclude without expressing my confident belief, that a very great advance was made in pathology when the vegetable nature of the diseases I have to-day referred to, as well as of some others, was demonstrated; and my equally confident belief, that the foundation for a very great advance in therapeutics was laid when Professor Graham introduced to notice the power of sulphurous acid to destroy vegetable life, and explained how it could be given internally without injury to the patient.

Note.—The solution of sulphurous acid I have used is made by passing a stream of the gas through water till the latter is saturated. Of this saturated solution, two ounces may be added to six ounces of water, to make the lotion.

The saturated solution of sulphurous acid I have employed has been either prepared in the Birkbick Laboratory of University College; or procured from Button's, Holborn; Hopkins and Williams, New Cavendish-street; or Burcham's, Albany-street.—*Med. Times and Gazette, August* 20, 1853, *p.* 181.

111.—ON EPIPHYTES AND ENTOPHYTES.

From a Review of Dr. Robin's "Natural History of the Parasitic Vegetables which grow on Man and on Living Animals;" and of Dr. Bazin's "Researches into the Nature and Treatment of Tinea;" by Dr. E. A. Parkes.

[It may be observed that all the vegetables which grow on living beings are low forms of Algæ, or Fungi.]

Most of these plants are composed of simple cells, or of cells placed side by side; the unicellular algæ being distinguished from the unicellular fungi by containing chlorophylle or some analogous substance, and usually one or more colored vesicles. The more highly formed algæ are composed of interlaced filaments (*Trichomata*), simple or ramified, cylindrical or flattened, and containing colored molecules; and of a reproductive system—viz., vesicles (*sporangia, conceptacles*) and spores (*sporidia*). The fungi are represented by filaments, at first simple, then ramified, and formed by a single elongated cell, or, more rarely, by several cells placed end to end (*mycelium*). The reproductive system is constituted by spores, which are seated on a receptacle, either at once or by the mediation of certain special structures, or are contained in a distinct vesicle (*sporangium*).

It would lead us too far to go into the minute anatomy of these plants, nor shall we attempt an account of the various genera and species which are found on the lower animals. We shall content ourselves with enumerating those which are found on the bodies of men.

The conditions of growth of the parasitic plants on human bodies are the same as in all other cases. Whenever the normal chemical processes of nutrition are impaired, and the incessant changes between the solids and the fluids slacken, then if the parts can furnish a proper soil, the fungi will appear.

The soil on which these plants grow is for the most part composed of epithelium or cuticle, acid mucus, or exudation; acidity, although favourable for their growth, is

not indispensable, since some of the cryptogamia grow in an alkaline or neutral ground, as on the ulcerations of the trachea. On the skin, and in the buccal and pulmonary cavities, the plants are exposed to atmospheric air, and many of the fungi absorb oxygen, and emit carbonic acid. In the intestines, the nature of the gas is somewhat different; but some species grow here also. Humidity and warmth are important conditions of growth, and these, of course, are always to be found in connection with the animal body.

An useful division of the subject for our purpose is afforded by the anatomical seat of the cryptogamia on the skin, or on the mucous membranes of man.

A. CRYPTOGAMIA ON THE SKIN.—Ten varieties have been noted in this locality. We shall enumerate them in the order in which they are given by M. Robin.

1. *Trichophyton tonsurans* (Malmsten).—Syn. *Trichomyces tonsurans; Mycoderma of the Plica polonica; fungus of the hairs in Herpes tonsurans; fungus of Porrigo scutulata; Achorion Lebertii; fungus of the Teigne tondante* (Bazin); *Rhizo-phyte* (Gruby).—This fungus was discovered and described in 1844 by Gruby, in the disease called by the brothers Mahon 'Teigne tondante;' by Cazenave 'Herpes tonsurans;' by Erasmus Wilson 'Trichoses furfuracea' (one of the diseases called ringworm and porrigo scutulata in this country). It exists also, as pointed out by Günsberg, in the plica polonica, although the two plants were formerly described as different.

The tricophyton is formed by oval transparent spores, which give rise to articulated filaments. Its anatomical seat is in the *interior of the roots of the hairs.* The hair and fungi simultaneously increase; the former seem larger than usual, are paler in color, lose their elasticity, soften and break off when they have risen some one or two lines above the surface of the scalp; in the short cylinder then left the fungus grows still more rapidly, so that the normal structure of the small stump of hair soon becomes indistinguishable. Sometimes the hair breaks off before emerging from the skin, and the fungus, epidermis, and sebaceous matter fill the ends of the piliferous conduits, and form the little prominences which can be seen by the naked eye in this disease, and give the skin a rough, anserrine appearance. The sporules and mycelium of the plants can sometimes be seen, in the form of a white powder, on the roots of the broken hairs; sometimes the cutis becomes congested and thickened, and then the plant is mixed up with scales of epidermis, with fatty and albuminoid granules, with pus, &c.; and crusts are formed of greater or less thickness, in which the growth of the fungus can go on.

MM. Robin and Bazin adopt unreservedly the opinion that the trichophyton is the cause of the disease known under the various names above given; and each author relates examples of the contagion of the disease by transmission of the spores. Bazin has made the very important observation that the same disease will attack horses, and can be communicated from them to men. But both Robin and Bazin, however, admit that there is some condition of the hairs (dependent, no doubt, on constitutional causes) which is essential for the growth of the plant, as sometimes the disease disappears—i. e., the fungus dies—without treatment.

The *diagnosis* of this disease is extremely easy. The usually round bald patches, with the little elevations caused by the swollen roots, and the dryish scales of epidermis covering the skin more or less, and accumulating round the elevations, are very distinctive marks. Occasionally, when the cutis is more congested, and the crusts are thicker from abundant cuticle and exudation, some doubt may exist, but then the trichophyton can be usually found in the crusts.

The *treatment* of this species of ringworm has been long one of the most difficult points in dermatology. Its principles, however, are now well understood, and few cases resist the proper measures. The essential point is to apply to the roots of the hairs a preparation which may destroy the trichophyton; if this can be done, the disease is cured. It is first of all necessary to remove the hair; this is in part generally accomplished before the case comes under treatment, by the course of the disease; if it has not been sufficiently done, 'epilation' can be accomplished by a chemical agent, or by extraction with pincers. M. Bazin recommends the ointment given below,* or the oil of cade, which appears to be the best depilatory known, or with these means epilation with the pincers may be combined. The removal of

* Lime and carbonate of soda, of each one part, lard 30 parts.

the hair permits a "parasiticide" solution to be applied to the hair-follicles, within which are the prolific spores of the fungus. For this purpose M. Bazin recommends either a solution of bichloride of mercury (1 part to 250 of water), or an ointment of the acetate of copper (1 part to 500 of lard). We have used also, with excellent effect, a solution of the pernitrate of mercury, about 1 part to 30 or 40 of water; this is, however, a very powerful remedy, and is to be cautiously used, as it easily blisters the scalp. We have used also an ointment composed of sulphate of copper (1 part), alum (3 parts), and lard (20 to 30 parts according to the age of the patient). Probably, however, a better parasiticide agent than any of these is the sulphurous acid, which we have seen Dr. Jenner employ lately in a case of favus, with astonishing results, and which doubtless would be equally successful in tinea tondens. Chlorine water might also possibly answer the same purpose.

With respect to the name of the most common disease in which the trichophyton tonsurans appears, the term used by Cazenave (herpes tondens) is extremely unfortunate; no doubt vesicles are sometimes seen, and sometimes the cryptogamic disease succeeds to true *herpes circinata* of the scalp, but in many cases there are no vesicles at all throughout the whole course of the disease. The term used in this country, *porrigo scutulata*, is inconvenient, as it is applied with greater justice to favus. The old term of tinea is, after all, by far the best, and the specific affix tondens expresses well one great feature of the disease, the baldness arising from the brittleness of the hairs.

[The second species, which has been little studied, is the *Trichophyton sporuloides*. The 3d is the *Trichophyton ulcerum*. M. Lebert has described a fungus in the crusts covering an atonic ulcer of the leg. The 4th is the *Microsporon Audouini*, present in the disease termed Porrigo decalvans by Willan. The 5th is the *Microsporon mentagrophyta*, found in a case of mentagra. This disease is easily cured by epilation, and subsequently using a lotion of bichloride of mercury. The 6th, the *Microsporon furfur*, has been discovered in the Pityriasis versicolor of Willan. The 7th, the *Achorion Schönleinii*, is the most important, being the fungus of Favus.]

Schönlein was the first to suggest that the honeycomb, or yellow favous crusts in the so-called porrigo lupinosa (Willan) and porrigo scutulata, were constituted by a vegetable growth. This has been repeatedly confirmed, and many excellent descriptions have been given of the disease, now called indifferently favus, tinea favosa, or porrigo scutulata; but none, we think, better than that which is contained in the work before us.

M. Robin believes he has discovered that the primary seat of the achorion is in the depth of the hair folliele, against the hair, and, as well as we can understand the description, outside the layer of epithelium which covers the root of the hair, and which forms "the inner root-sheath" of Kölliker. In this observation, however, he has been anticipated by Wedl, who has pointed out that by using a concentrated solution of liquor potassæ, to make the parts transparent, the fungus is found in the follicle round the hair at the place where it passes through the epidermis. In addition to this, the plant is found in depressions on the surface of the skin, forming the yellow honeycomb-like masses which give the specific name, favus, to the disease; and which, from their frequent buckler-like shape, suggested the term 'scutulata.' The development of the achorion in this situation is described by Robin after Remak and Lebert. A cuticular elevation is seen, beneath which is a small favus; when the cuticle is raised, a drop of pus sometimes issues; hence the error of those who have considered this disease always pustular; generally, however (Robin, Simon, and Hœfle), there is no pus or liquid of any kind; the plant grows, and the cuticle over it (supposing it has not been forcibly detached) finally separates, leaving the favus exposed to the air.

M. Robin does not notice the important statement of Simon, that at first there is at the point where the favus is about to form, only an increased secretion of epidermis; he notices briefly the fact, that sometimes the under surface of the favus is coated by cuticle, which separates it from the compressed and attenuated derma.

The structure of the favus is given at length by both authors, but it is scarcely necessary to do more than notice that Robin, in addition to the mycelium, the spores, and the receptacles of the achorion, describes a finely granular amorphous layer, which forms the external coat of the favus, and is the representative of the amorphous 'stroma' which often accompanies the mycelium of algæ and fungi. In the

favus, also, as we shall presently see, another and distinct fungus can sometimes be found.

M. Bazin describes the favus under three heads, which are fundamentally identical, and different only in respect of form.

1. Favus urceolaria dissemina: this corresponds to the porrigo favosa, Favus dispersus, Teigne alveolaire, of other authors.
2. Favus scutiformis: this is the porrigo scutulata, or favus confertus.
3. Favus squamosa; a form usually called scutulata, but distinguished chiefly by the irregular distribution of the achorion, and by the furrowed masses formed by the fungus, the hairs, epidermis, and exudation.

The treatment of favus recommended by Robin and Bazin is epilation, and the application of the corrosive-sublimate solution, or of acetate-of-copper ointment (1 part to 500 of lard), to kill the plant still remaining adherent to the hair follicle. We suspect that the sulphurous acid employed by Dr. Jenner will be found a more effectual application than either of these two. [The remaining species of this division are unimportant.]

B. Cryptogamia on the Mucous Membrane.—The plants forming on mucous membranes, or in the contents of cavities lined by mucous membrane, are of less interest than those which grow on the skin, as in most cases they are decidedly only secondary. We shall merely enumerate them.

1. *Cryptococcus cerevisiæ.* Kutzing. (Syn. Torula cerevisiæ—the yeast-plant), in the bladder, stomach, intestines, &c.
2. *Merismopœdia ventriculi.* Robin. (Syn. Sarcina), in the stomach, intestines, &c.
3. *Leptothrix buccalis.* Robin. (Syn. Alga of the mouth.)
4. *Oscillaria (?) of the intestines.* Farre.
5. *Leptomitus urophilus.* Montagne. (An alga, described as forming in the urine. It has as yet been scarcely studied.)
6. *Leptomitus (?) Hannoverii.* Robin. (Alga found by Hannover in the pharynx and œsophagus.)
7. *Leptomitus (?) of the uterus.*
8. *Leptomitus of the uterine mucus.*
9. *Leptomitus of the eye.*
10. *Oidium albicans.* Robin. (Syn. Cryptogamia of diphtheritis and aphtha.) Aphtophyte (Gruby).
11. *Fungus of the lung.* Bennett.
12. *Fungus in the discharge of glanders.—Brit. and For. Med. Chirurgical Review, Oct.* 1853, *p.* 416.

112.—*On the Treatment of Pityriasis Capitis.*—[Mr. George Duplex, in a letter to the editor of the 'Lancet,' recommends the application, every night, of a little nitrate of mercury ointment softened with almond or olive oil. A few doses of alkali with a slight bitter may be also of service. He says:]

Many years ago I was frequently much teased by the apparent obstinacy of this affection: but since I have adopted the above formula, I have always succeeded in relieving my patient in a short time. I also use occasionally a lotion of the nitrate of mercury dissolved in distilled water (much weaker in strength than the ointment), in cases where the trunk has been almost covered with the eruption; it need only be applied every second or third day with a sponge. I need scarcely observe that this disease is generally liable to return; but if the above remedies be immediately resorted to on its re-appearance, scarcely more than the application will be necessary for its removal.

[Mr. M. J. Connor, another correspondent, observes with regard to the peculiar obstinacy of a case under his care:]

After repeated applications of my own prescribing, and after having had recourse to old prescriptions, I almost gave up the case in despair, when it occurred to me to try cold water, and advised that the head should be washed in cold water every morning, at the same time recommending a mixture, with one drachm of sesquicarbonate of soda dissolved in six ounces of any bitter infusion; two tablespoonfuls to be taken three times a day. In a very short time the improvement was wonderful,

and in about three weeks or a month the scalp was perfectly free from disease, and has continued so ever since.

I am now perfectly satisfied, after the experience I have had in this very troublesome disease, that all stimulating applications, oils, and oleaginous compounds should be avoided, as they only tend to aggravate the disease.—*Lancet, Oct.* 1, 1853, *p.* 330.

113.—*On the Treatment of Psoriasis.* By Dr. Robert Crawford, Peebles.—[Dr. J. A. Easton, of the Glasgow Royal Infirmary, treated cases of lepra and psoriasis by acetate of potass. The following case is a proof of the value of the same treatment in the hands of Dr. Crawford. The patient was a female aged 53, who had carried on business as a small grocer, which caused her to be much upon her feet. Œdema of the ankles gradually came on, and the legs became red and scaly. The disease progressed until at length it terminated in one of severe psoriasis. The treatment was as follows:]

Nourishing diet. ℞. Acet. potass. 3ij., aquæ ℥iij., solve. sig. A teaspoonful in a little water three times a day. Locally, the limbs to be put for five minutes, night and morning, into a tepid bath containing bicarb. sodæ 3j. The scales to be gently brushed off with a soft flesh brush, and then the following be applied:—℞. Plumb. diacetat. solut. ℥j. 3vj., sol. mur. morph. 3ij. sig. A teaspoonful to be mixed with a tablespoonful of cream and applied to the limbs. The disease now began speedily to disappear. The pain and itching abated, and sleep returned. The amount of urine greatly increased, the sp. gr. at the same time rising, showing a greatly increased relative quantity of the solid ingredients. On the 21st June, the skin had regained its healthy appearance, and she was able to walk with the help of a staff.—*Monthly Journal of Med. Science, Oct.* 1853, *p.* 281.

114.—*Lotions and Medicated Poultices in Phlegmonous and Erysipelatous Inflammations, and especially in Paronychia.* By Dr. Fred. James Brown, Chatham.—[In all these cases Dr. Brown urgently recommends the employment of astringent and sedative lotions, and poultices made with these instead of water, for not only, he says, may the disease by these means be sometimes checked before suppuration takes place, but when matter is formed the inflammation is not so great and the parts are much sooner healed. He says:]

The astringents that I employ are the sulphate of zinc and burnt alum mixed with acetate of lead. This is an unchemical mixture, but its use is satisfactory. I am indebted to my father, an old staff surgeon, for the prescription, which is, for each ounce of water three grains of burnt alum, two grains of zinc, and two grains of lead. The lotion should be used warm. It is advisable to omit the lead after the disease has been subdued, for fear of its effects on the muscular system, although I have never seen ill effects from perseverance in its application for many weeks. These ingredients placed in paper as a powder, in sufficient quantity for a wine-bottleful of water, enable a patient to use the lotion both freely and cheaply.

I have no doubt but that many surgeons use lotions for the affections mentioned, and I must therefore apologise for bringing forward this mode of treatment; but I have seen so many fingers crippled by the persistence of inflammation under the water-poultice treatment that I consider the subject worthy of attention. Surgeons can see the improvement that occurs in many diseases of the eye, ear, and throat, from the use of astringent lotions, yet they commonly neglect such applications in phlegmonous inflammation occurring in the trunk and limbs.

Nitrate of silver is sometimes applied over surfaces affected by erysipelatous inflammation, but I am not aware that astringent lotions are usually applied by means of cloths laid upon the parts. I recollect reading in one of the periodicals of sulphate of iron lotion for erysipelas, and I have employed it with advantage.

I presume that the astringents diminish the calibre of the bloodvessels, and effect some change upon the nutritive process by which the profuse formation of cells is restricted. Certain it is that the inflamed part becomes diminished in size and whitened; and suppurating parts yield secretion in greatly diminished quantity (without becoming hot and dry, as might be anticipated), whilst their bulk is reduced.

The internal treatment that exerts most influence on paronychial inflammation is

sulphate of quina in Epsom salts mixture, preceded (in severe cases) by a few doses of tartrate of antimony in Epsom salts mixture. The same internal treatment is peculiarly efficacious in erysipelas and phlebitis, and in the unhealthy inflammations generally, as they are termed.

In concluding these few remarks, I would mention that the ancient lapis divinus (alum, nitre, and sulphate of copper) constitutes a gargle that will quickly remove inflammation of the throat; and the same (with the omission of the nitre) forms a lotion under the use of which sores on the penis heal with rapidity.

The medication of poultices by means of ointments is advantageous in certain cases. Resinous ointment mixed with a poultice considerably hastens the suppuration and cure of a boil, and it will cause the skin to yield much sooner in abscesses of the breast and neck than occurs under simple poulticing. Red oxide of mercury ointment mixed with a poultice cleanses foul sores and expedites their healing. Medicated fomentations and poultices were in great esteem formerly, but they have fallen into a negiect which I consider to be unmerited.—*Lancet, May* 28, 1853, *p.* 493.

115.—TREATMENT OF SIMPLE ERYSIPELAS AS A LOCAL ACUTE DISEASE.

By John Higginbottom, Esq., F.R.S

[In a paper read before the Midland Counties' Branch of the Provincial Medical and Surgical Association at Nottingham, Mr. Higginbottom observes:]

I wish to bring before my professional brethren the following questions:—

1. Is simple acute erysipelas a purely local, or a constitutional disease?
2. Is it sometimes a local, and sometimes a constitutional disease? or,
3. Is it simultaneously both, a local and a constitutional disease?

I am of opinion that it is in all cases purely local; and that the constitutional symptoms are a result of the local disturbance. This opinion I have formed from the following facts:

1. I have had a number of cases of erysipelas on the face and elsewhere, where there have been no constitutional symptoms; in these the disease has been directly arrested and subdued by the application of the nitrate of silver. Now, it is my opinion that, if the erysipelas had been allowed to proceed without the local application, severe constitutional disturbance would have been the result.

2. If from exposure to wet or cold, &c., a feverish attack should come on, and in several days erysipelatous inflammation should supervene; on a prompt application of the nitrate of silver, along with the use of common remedies for the cold, the patient becomes convalescent in a few days: but if the local application is neglected, the inflammation runs its usual course, the constitutional symptoms become more aggravated, and the illness is much prolonged.

3. If the erysipelas and constitutional symptoms are simultaneous, a prompt application of the nitrate of silver, and the use of active constitutional remedies, cut short the disease, and the patient is convalescent in a few days. But if the local application is neglected, the disease runs its usual and often destructive course, setting at defiance the most active constitutional treatment.

In my 'Further Observations on the Nitrate of Silver,' p. 31, is related the following case, which will illustrate what I have advanced.

Case 1.—Mrs. S., some years since, had a severe attack of erysipelas of the face and head, which ran its course under the old medical treatment; the effects of the disease were so severe as to confine her to her bed-room for six weeks.

In November, 1845, she had another attack of erysipelas, which had progressed twenty-four hours before I saw her. A decided application of the nitrate of silver was made to the parts affected, and purgatives were given. She was convalescent in seven days.

The following year, in October, erysipelas again made its appearance on the face. She had taken a purgative before I saw her. One decided application of the nitrate of silver was sufficient, and she was not confined to her house a single day. No further remedies were required.

Mr. Nunnely, of Leeds, in his monograph on Erysipelas, says (contrary to his own *opinion*), that Dr. Smyth, Mr. Earll, Mr. Arnott, Mr. James, and Mr. Lawrence, con-

sider that "erysipelas is essentially a *specific disease*, affecting one tissue alone, characterized by the local disorder, which forms the chief symptom and upon which the constitutional distubance depends."

From the commencement of my treatment of erysipelas with the nitrate of silver, I have considered it a local specific disease; and this view appears to be supported by the speedy subsidence of the fever, as soon as the local disease has been subdued by the application of the nitrate of silver.

Erysipelas may be considered as the result of a poison *sui generis*. It remains at first like a small patch on one side of the nose, cheek, or elsewhere, and makes often no progress for twelve or twenty-four hours, continuing so long as to generate its own poison, which is then carried into the system: and at this period, the constitutional symptoms commence.

The following are my reasons for believing that erysipelas is a local disease; which I wish to repeat:

1. If erysipelas makes its appearance on the face without constitutional disturbance, the prompt application of the nitrate of silver alone is sufficient to arrest and subdue the disease.

2. If fever and constitutional symptoms come on before the appearance of erysipelas, the simultaneous use of the nitrate of silver and constitutional remedies cut short the disease, and the patient is convalescent in three or four days. But, if constitutional remedies alone are used, and the nitrate of silver neglected, the disease will commonly run its usual course.

3. If the erysipelas and constitutional disturbance come on simultaneously, the prompt use of both the nitrate of silver and the constitutional remedies arrest and subdue the disease. If the nitrate of silver is omitted, the disease will run its usual course.

4. Whether the disease be idiopathic or traumatic, the erysipelas has the same characteristics. The inflammation spreads and produces the same dire effects; first, on the skin; second, on the cellular tissue; third, on the mucous and serous membranes. Both the idiopathic and the traumatic erysipelas are cured by the same means.

Of course, the disease is often mild or aggravated, according to the healthy or unhealthy state of the patient, whether temperate or intemperate. I have always found consumers of alcoholic drinks most difficult to cure, in erysipelas as well as in all other diseases; and if they were banished altogether from medical practice, acute disease would be sooner cured, and chronic disease would be more manageable.

I do not believe in the occurrence of metastasis in erysipelas. That distant parts are affected in erysipelas is true; but this appears to me to be caused by the extension of the disease, and by the specific poison of the erysipelas carried into the system.

I would make an observation here which I have often insisted upon; viz., that in all cases a strong solution of nitrate of silver should be used—*one scruple of the nitrate to one drachm of distilled water*. I not only use this strong solution, but also rub the stick of the nitrate of silver on any particular part where I wish it to be well applied. I have attributed the failure of this excellent remedy in the hands of some surgeons to the use of a weak solution; and this I have named, with other causes of failure, in my 'Additional Observations,' p. 19. In an excellent paper, by Dr. W. S. Oke, published in the 'Association Med. Journal' for January 21st, 1853, p. 53, 'On Erysipelas, &c.,' he mentions a surgeon who has used the nitrate of silver successfully, with a solution of one scruple of the nitrate of silver, six drops of the nitric acid, and *one ounce* of water. I am sure such a weak solution cannot be depended upon. I never knew a very free application of the strong solution, or the stick of nitrate of silver, "produce the destruction of the cutis vera," or be attended with any ill consequences.

Dr. Oke says, "The Royal South Hants Infirmary, in common with other hospitals, has occasionally been invaded by erysipelas with an average result; but since the nitrate of silver has been employed, the unfavourable terminations have been comparatively very few; and I am persuaded, that were this excellent remedy more frequently adopted, erysipelatous inflammation might be generally controlled."

From a late epidemic of erysipelas in Nottingham, I have selected six cases; four where the nitrate of silver was applied, and two where it was omitted; the results of which were in accordance with my experience for the last twenty years.

Case 2.—Mr. M., a railway clerk, aged 26, had erysipelas on the left side of his face, not reaching the scalp. He was slightly indisposed. One decided application of the nitrate of silver was alone required. He took an ipecacuanha emetic, followed by a calomel pill and purgative draught, and a saline mixture. He only required visiting four days.

Case 3.—Mr. F., a farmer, about 50, a free liver, called at my house to consult me, having an erysipelatous inflammation of the face upon the right ear. It was spreading near the scalp. He was so little indisposed, as to be able to ride five miles on horseback to visit me. I applied directly, and very freely, the nitrate of silver to the inflamed part close to the scalp, and on and beyond the inflamed ear, fearing much that the scalp would become affected. I thought proper to prescribe for him an emetic of ipecacuanha, a calomel and colocynth pill at bedtime, and the following morning an active purgative mixture. He returned home on horseback, and I heard nothing more of him for a week, when he sent for a repetition of the purgative mixture, with a message that the inflammation was quite gone.

Cases 4, 5.—In October, 1852, two sisters, between 20 and 30 years of age, living together in the same house, had erysipelas. The eldest had been indisposed for several days before I saw her, and the disease was attended with much constitutional disturbance—the erysipelas having partially affected the scalp. I thought it necessary to have the whole head shaved (although it caused considerable pain), so that I might apply the solution of the nitrate of silver freely to the whole scalp. The usual constitutional remedies were used. In this case the recovery was more tardy on account of the application of the nitrate of silver having been so long delayed. A troublesome inflammation of the eyes was produced in this case, by the neglect of applying the nitrate of silver on the inflamed eyelids, which should always be attended to, in order to prevent inflammation of the conjunctiva.

The younger sister, disliking the application of the nitrate of silver, was desirous of taking an emetic and purgatives, to check the inflammation; but finding the erysipelas to come near the scalp, she submitted to a very free application of the nitrate of silver, which extinguished the inflammation, and she was glad that her hair was preserved.

In the two following cases, the nitrate of silver was not applied.

Case 6.—Mr. G., aged 54, of a gross habit, a habitual consumer of alcoholic drinks, and a smoker of tobacco (but not an intemperate man), had in October a catarrh, and felt generally indisposed. There was a slight blush of erysipelas on the left side of the face, but not sufficient to excite any particular attention. Remedies were employed for his catarrh, but no local application was used to the erysipelas. The inflammation progressed over the scalp, and produced cerebral disturbance, which, however, was not severe; the throat and the mucous membrane of the larynx became inflamed; the irritation and cough increased; the constitutional symptoms were now very severe; the mucous membranes generally were affected; the joints were affected with severe pain and inflammation (similar to rheumatism), and the secretions were diminished in quantity, and in a vitiated state. A general bad state of body was induced, and after suffering a number of weeks, he died.

In this case all the severe symptoms followed the increase of the erysipelatous inflammation, and I think would have been prevented by a prompt and early application of the nitrate of silver.

Case 7.—In November, Miss J., aged 35, was attacked with a slight erysipelas on the left side of the cheek and nose. No external application was used. An emetic, active purgative, saline draughts, and repeated doses of calomel and James's powder were given. The erysipelas progressed over the scalp, down to the neck, and a little on the chest. A continued and severe indisposition was the consequence, attended with cerebral disturbance, producing delirium for several days; for which blisters were applied to the nape of the neck. Several large abscesses formed in the neck and chest; the last of which was opened in eight weeks from the commencement of the erysipelas.

The above two cases were all I had attended for some years, where the nitrate of silver was not applied. Both were mild in the commencement. The result showed the necessity of a prompt and decided application of the nitrate of silver, even in the slightest attacks of erysipelas, to prevent future evil consequences. In the last case, all the severe illness would have been prevented by a timely application of the nitrate

of silver. I do not say it *might* have been prevented, for the continued experience of twenty years or more has assured me of the practical truth, that it *would* have been prevented. I have had no case where abscesses have formed when the nitrate of silver has been early and well applied in erysipelas.

I have found that a very decided application of the nitrate of silver in phlegmonous erysipelas has the extraordinary power of preventing the destruction of the subcutaneous cellular tissue, by preserving the integrity of the cutis vera, and subduing the cuticular inflammation. Even in a patient where the limb has been as large again as the other, in which it could be scarcely expected to be benefited, the application has so far modified the inflammation as to render it a case of simple phlegmonous abscess, which has been relieved by a free opening with the lancet, and where there has been no loss of cellular tissue.

Case 8.—Mrs. B., aged 68, living in a low part of the town (Narrow Marsh), had phlegmonous erysipelas of the whole of the right leg, extending a little above the knee on the thigh; the leg was as large again as the natural size, and was very tense and painful; there were some vesications on the fore part of the leg; the patient had been neglected, till the state of the limb alarmed her friends I directed an emetic, purgative, and saline mixture, and applied the strong solution of the nitrate of silver very freely on the whole of the leg, and on and above the inflamed part of the thigh. The following day the nitrate of silver had had the desired effect of allaying all irritation and inflammation, in which state it remained for four days; on the second and third day, a considerable degree of vesication had taken place, from the free application of the nitrate of silver; but I found the limb did not at all diminish in size; on that account, I knew from former cases, that suppuration had taken place. On the sixth day, I made a free opening about two inches in length at the most depending part, about the middle of the limb; a large quantity of pus was evacuated, but there was not the least appearance of any sloughing of the cellular substance. In a few days afterwards, I made a small opening above the outer ankle, from which some sero-purulent matter was evacuated; and in a few days on the opposite side of the limb, from which issued only a little serous fluid. The limb quite recovered. No further application was required, beyond the black lint and nitrate of silver to the sores, and a common linseed poultice constantly applied, repeated every eight hours. I never knew a limb in the same state, under the common mode of treatment, which terminated so favourably.—*Association Med. Journal, April* 1, 1853, *p.* 276.

116.—THE LOCAL TREATMENT OF CARBUNCLE AND FURUNCLE.

By Richard Flint, Esq., Consulting Surgeon to the Stockport Infirmary.

[Mr. Flint has followed the method of treating the above diseases now advocated more than twenty years, and thinks the remedies may be almost termed "specifics." He says:]

Considering these morbid actions as manifesting want of power in the vascular system of the parts affected, I sought for an application that would, if possible, assist or increase it, and at the same time not interfere with the natural excretions from the skin. This I thought I saw in the common lead or litharge plaster, spread on the white leather of the shops. The former, if correctly prepared, will answer fully the object intended; and the latter ought to be well dressed, having no hard or harsh parts in what is selected for use. There is in lead plaster, besides its unirritating quality, a valuable property, which seems to have been often overlooked or forgotten —that of promoting or inducing perspiratory exhalation from the skin. Every surgeon must occasionally have noticed that, where the common lead fascia (containing no resin) has been allowed to remain on any part of the trunk or limbs for weeks, when it is removed there will be seen a considerable quantity of perspiratory fluid which has been pent up, showing no other consequences than a little soddening of the skin upon which it has been so long confined. For this reason, I always prefer using the plaster without any admixture or combination; and, if fresh, it has every requisite adhesive property. To this peculiar effect on the cutaneous exhalants, I attribute much of its beneficial influence in the more acute boil or carbuncle. It

must, however, be allowed, that in the extremely acute forms of this disease, the most soothing applications to the surface of the skin are indispensable, and that fomentations and poultices, for twenty-four hours or longer, may be quite necessary. But I would say that as soon as the plaster can be borne it ought to be applied without delay. It is likewise to be remembered that there are idiosyncrasies where a plaster, entirely unirritating under ordinary circumstances, cannot be endured, from the cutaneous irritation and excitement which follow its use. This, of course, is to be regarded as an exception to a rule.

The mode of application is the following. After spreading the plaster in the ordinary manner, it is to be cut in dimensions according to the size of the carbuncle or boil to be dressed; carefully observing that it is large enough to include from half-an-inch to two or three inches of the surface around the tumour. Where this is large and deep, as in a carbuncle from four to six or eight inches in diameter, the circumference to be embraced should be proportionately large; and the leather, in such a case, should be chosen soft and strong, in order to obtain an amount of adhesive mechanical support to the surrounding and subjacent parts, so as to enable them to originate and establish a new action. It must be well remembered that it is not enough, in any of these dressings, to cut the plaster the exact size only of the tumour. It is expected that some of the surrounding surface should be taken in also.

In twenty-four hours after dressing, favourable change in the appearance of the parts is generally discernible; and—what will be allowed to be a highly important result, in those cases where the local irritation is fast inducing a state of cerebro-spinal distress and lesion, likely soon to end in coma and death—it will often, in a less period of time, afford a mitigation of suffering which comes upon the patient like a charm, and restores him the rest and sleep to which he had long been a stranger. If the tumour be prominent or pointing in any part, a crucial incision is to be cut in the plaster, and placed directly over it, that the discharge may have free egress; and should there be at first no suppuration, this mode of dressing quickly promotes it, and assists the living parts to detach and throw off, at the least possible loss, the sloughy cellular membrane. If the tumour is not disposed to slough or suppurate, the application decidedly hastens the resolution or absorption of the effused matter.

In a boil the dressing is precisely the same as in a carbuncle; taking care that the plaster has sufficient hold of the tissues around—perhaps from half-an-inch to an inch. In a few hours, the acute pain and suffering of the patient, which had unceasingly disturbed his rest and comfort, become greatly mitigated, and soon afterwards wholly removed; and the improvement in the condition of the parts is strikingly apparent on every renewal of the plaster. The little trouble and inconvenience of this method, both to patient and surgeon, strongly contrast with the inconvenience, wearisome labour, and attention required by the old plan; and whilst the latter necessarily confines the patient, even in minor cases, to the house, in bed, or on a couch, the former will often be little or no restraint on his usual avocations.

It is requisite that the plaster be changed more or less frequently, according to the extent of discharge or slough; but the longer the interval the more desirable, as the less the parts are disturbed the better. If there be much discharge or slough, soiling the cut edges of the plaster, it may be changed once a day; if there be little, every third or fourth day will be sufficient; but the linen pledgets and bandage adjusted over the plaster, and absorbing the discharge as it exudes, may be replaced frequently. In general, no other dressing is required to the end of the treatment. The plaster must be reduced in its dimensions as the tumour lessens in size, whether it be by suppuration, slough, or absorption. In some instances towards the close, simple or calamine cerate may be desirable. The solution of the nitrate of silver, of the strength of 3i. to ℥i., will also be found of great value as a cicatrizer; for I concur with my friend Mr. Higginbottom that, besides other valuable properties, which he has so ably advocated, there is no agent in surgery so useful for promoting healthy cicatrization or removing excoriations as lunar caustic. It likewise excels all other means in giving increased vigour and strength to a new cicatrix.

From what I have seen of this method of treatment in a number of patients during the last several years, and from the speedy relief or total removal of pain and distress in the worst cases, and in bad temperaments, I have looked upon it as of *great* value, if attentively carried out; for I am persuaded that it will render recourse

either to the knife, to caustic remedies, or any of the other more severe measures of our art, unnecessary. Should, however, the choice of the surgeon and patient lead them to the latter alternative, I would strongly enforce that, whether it be the knife or the caustic, it be always used at an earlier stage of the disease than is yet commonly practised, as this, like the early free incision in diffusive inflammation of the cellular membrane, will prevent the destructive ravages of tissue, as well as the fatal constitutional symptoms which follow the unchecked and protracted course of the disease.—*Association Med. Journal, July* 15, 1853, *p.* 606.

117.—ON THE TREATMENT OF INDOLENT ULCERS BY INCISIONS.

By John Gay, Esq., Surgeon to the Royal Free Hospital.

[In the employment of his bandage, Mr. Baynton considered its chief value to be from the pressure which the ulcer received from it, and especially as tending to bring the edges of the ulcer closer together. Mr. Critchett, in his work on ulcers, condemns this view, believing the value to arise from the support given to the circulation in the veins, especially if they happen to be diseased.]

Mr. Baynton's plan of bandaging, with the view of bringing the edges of the ulcer closer together, and Mr. Critchett's, for the purpose of giving support to the limb, have equally been successful, and have as often failed. The anomaly therefore remains, from which the following question arises: Why does bandaging fail of curing an ulcer when *à priori* there was every reason to expect that it would have induced its cicatrization? The author believes that it arises entirely from a non-recognition of the principles upon which all ulcers must be treated in order to insure their cicatrization, and of the real part the bandage must take whilst carrying these principles into practice; and he observes that the end which the surgeon should have in view should be to give freedom to the edges of an ulcer, that they might be enabled to contract, as well as freedom to the adjoining tissues, that these might yield to the traction thus made upon them. It is now plain how pressure can promote the healing of certain sores,—but that it can only do so mediately, and this by removing any condition of the edge and adjoining parts that might be unfavourable to that process. It cannot, however, as is supposed, promote the immediate act of cicatrization, but on the other hand (if it has any influence at all on the process), retards it by the restraint which it is calculated to place upon the movements of the skin. The bandage, however, can be applied so as directly to favour the act of cicatrization; but this it can only do when used as Baynton applied it—i.e. in such a manner that it shall "bring the edges of the ulcer nearer together." The author related the case of a lady who had a small varicose ulcer over the inner malleolus, surrounded by a broad patch of eczematous skin. He tied the veins, placing a ligature on one close to the edge of the sore, within the area of the diseased skin. The ulcer healed, and with it all the wounds made by the ligatures, except that near the cicatrix of the ulcer, which remained open, having the same indisposition to heal as that manifested by the original sore. Another ligature was applied to a vein observed to be running towards this sore close to its edge. The same results followed; the ulcer healed, but the sore made by the ligature gaped, and became an indolent and apparently an incurable ulcer, for it resisted every effort to induce it to heal. After a few weeks the whole leg was attacked with erysipelas, and vesication ensued over the diseased portion of skin. On the subsidence of the inflammation, the skin assumed its former healthy condition, and the ulcer immediately healed. The author thinks it clear that the obstacles to the entire and permanent healing of these indolent ulcers are to be found directly in the condition either of their edges or of the adjoining tissues, or in that of both conjointly—i.e. the edge of the ulcer is not free to contract, or the adjoining textures are not free to yield to the traction that the edge, in closing in, makes upon them. The treatment he proposes will be gathered from the recital of the two following cases:—

Case 1.—E. F., aged 36, a seafaring man, was admitted into the Royal Free Hospital for an extensive ulcer on the front and lower part of the leg, consequent upon a blow received seventeen years since. He had been an inmate of many hospitals, and the sore had on as many occasions readily yielded to rest and treatment up to a

certain point; but after diminishing to the size of a shilling, or rather larger, the process of healing became invariably checked, and no means could bring about complete cicatrization. On resuming his usual occupation, the ulcer invariably began to spread; and, in despair of obtaining a cure, the poor man requested that his limb might be amputated. Instead of acceding to his request, Mr. Gay had him placed in bed, and the ulcer treated with water dressings. It began to granulate, and to close in, but after a while this process again suddenly ceased, and in despite of strapping, bandages, and topical applications of all kinds, refused to proceed any further. On careful examination, Mr. Gay observed, that at the part where the ulcer was situated, the leg was less in size for a space corresponding to little more than the longest diameter of the cicatrix, as though, in that particular part, it had been surrounded by a tight bandage. The skin itself immediately around the sore, instead of being elastic, and free to glide over the subjacent tissues, was tense and immovable, although in other respects apparently healthy; and any attempt to draw the edges of the sore nearer together was thereby rendered futile. Mr. Gay, therefore, made an incision through the healthy skin and superficial fascia of the length of the whole cicatrix, within a short distance of the edge of the sore, and in a direction parallel to the long axis of the limb, and therefore at right angles with the line of principal tension. The wound first gaped a little; the ulcer, however, began immediately to close. On the third day, the wound gaped still more; and it was interesting to observe that the edge against the ulcer followed exactly the outline of its edge as the latter varied in the course of healing—manifestly the result of the traction made by the edge of the ulcer upon that of the wound. After the fourth day, by which time the sore had almost closed up, the process of healing was less rapid; but within twelve days cicatrization was complete, and in another twelve days that of the supplemental sore was likewise accomplished.

Case 2.—A. B., aged 29, a domestic servant, had a sore on the inner malleolus, of the size of half-a-crown. It had existed for twelve years, and was supposed to be due to large varicose veins, which were to be seen running down the leg towards the ulcer. On three separate occasions Mr. Gay tied the veins, and the operation, with rest, appeared to be successful. The ulcer, however, re-opened on each occasion shortly after her return to her work. On examination, it was observed to be shallow, and disposed to heal, whilst its edges were hard, and immediately fixed to the subjacent tissues. Towards the heel the adjoining skin was a little thickened, of a purplish colour, and also fixed; but in the opposite direction, immediately beyond the edge of the ulcer, it was perfectly healthy, and very loose.

It will now be obvious that in some important respects this case differed from the foregoing; for, whereas in this the edges of the sore were free, but the adjoining skin fixed; in the one under consideration the edges were fixed, but the adjoining skin on one side was free. This ulcer was, therefore, treated in the following manner:—After excising it entirely by means of incisions close to its edge, Mr. Gay made two other incisions parallel to the edges of the new sore, and about an inch from them through the adjoining skin. The portion of sound skin towards the surface of the foot, included between the sore and the front incision, was then dissected from its adjacent connections, shifted over on the site of the ulcer, and its edge united to that with which it was now brought into contact by means of hare-lip needles. The incision towards the heel was left for the same purpose as that for which the analogous incision in the former case was made—viz., to relieve tension. By the fourth day the transplanted flap had united to the base of the sore, and, with the exception of a very trifling slough of a portion of the opposite edge around the needle, all was going on perfectly well. This case is given so far as an illustration of the practice which Mr. Gay thought proper to adopt in accordance with the principles advocated in the foregoing remarks. A severe attack of typhus fever overtook this patient, and with its accession the reparative processes, which had been going on most satisfactorily, were interrupted for a time. These, however, have since been satisfactorily renewed, and the flap of healthy skin which supplied that lost by ulceration is becoming reunited to the base of the sore, and will yet take an important part in the future stability of the cicatrix. The plan of treatment which Mr. Gay suggests for ulcers, which he says appear to defy all other methods, is now obvious. It is, to relieve the tension of the adjoining skin or other

tissues, where that is opposed to the healing of a sore, by incisions at right angles with the apparent line of tension, as in the first case; or by a species of plastic operation to supply new skin altogether, where the obstacle to its formation lies in an irremediably fixed condition of the edge of the sore itself, as in the second.—*Lancet, June* 18, 1853, *p.* 568.

[In a letter to the editor of the 'Medical Times and Gazette,' Mr. H. T. CHAPMAN, after commenting upon the above operation, proposes the following modification, which he considers to be simpler in its performance, and obviating the danger of producing one or more ulcers by the incisions practised by Mr. Gay:]

The plan referred to consists in simply raising the adherent skin from its connexion with the parts beneath, by gliding a double-edged bistoury under the tense margins of the sore, so as to set them free to a sufficient extent to admit of their edges being brought nearly, if not quite, into contact, across the suppurating surface, my intention being afterwards to maintain them in that position by short straps of adhesive plaster, until union had taken place. A further division of the raised margins, at right angles to the sore, may sometimes be requisite for their better adjustment.

Its feasibility not having, then, been tested, I did not think it worth while to allude to what was no more than a project in the second edition of my Essay on Ulcers, published in the early part of the present year; but spoke of it to a number of friends attached to hospitals, in the hope that some of them might be induced to give it a trial. This has been done recently, under the influence of chloroform, by Mr. Ure, at St. Mary's Hospital, although my views were not entirely carried out,—the after treatment consisting merely of water dressing and rest, no effort having been made to draw together the liberated margins with adhesive plaster. The latter stage of the cure was accordingly completed by granulation, and occupied more time, I imagine (about a month), than if the straps had been employed. Its success, nevertheless, has been sufficiently marked to encourage its repetition in other cases, a notice of which will, in all probability, ere long appear.

One word of caution in conclusion. A tendency will always, perhaps, prevail to adopt and practise these and similar novelties without due discrimination. I have already been asked my opinion as to the propriety of an operation in two instances where no shadow of a necessity existed for any measure of the kind. The margins of neither ulcer were more than ordinarily adherent to the parts beneath, nor could I discover the least tension of the surrounding skin. Both sores, in fact, afterwards healed under long established methods of treatment.

The cases are extremely few in which an operation is indispensable; and still fewer, I suspect, are the private patients who will submit to the treatment of an ulcer on the leg by the scalpel, even when all other attempts have failed.—*Medical Times and Gazette, Aug.* 13, 1853, *p.* 176.

118.—ON THE TREATMENT OF ULCERS BY GALVANISM.

By T. SPENCER WELLS, Esq., H.M.S. *Modeste.*

[Having had repeated opportunities of witnessing the effects of a single current on ulcers and granulating surfaces, Mr. Wells thus records the main point of his experience. He says:]

The apparatus I have used has been of two kinds. The first is a single pair of plates,—namely, an oval plate of zinc from one to three inches in the long diameter, and a plate of pure silver of the same size and form, the two being connected by a silver wire soldered to the back of each plate. The second I have only used for about a year. It is Pulvermacher's electric chain, which I have used with six and eighteen elements. I shall first state the result of my experience with a single pair of plates, subsequently remarking upon the comparative influence of Pulvermacher's chain.

1. To secure the effects of the apparatus, it is necessary that the surfaces of the two metallic plates be perfectly smooth and clean, and that they should be applied to the body without intervention of any substance whatever. At first I believed that.

it was necessary to denude the cuticle; and accordingly, when I required to act upon an exposed surface, I applied one plate upon it, and made a small puncture in some neighboring part, upon which the other plate was applied. I soon found that this was unnecessary, and that it was only necessary to moisten the cuticle to insure the passage of the current. When moistened by vinegar, or an acid solution, the effects were quite as rapid as after the denudation of cuticle.

2. If two slight excoriations, two ulcers or suppurating surfaces, upon a limb or any part of the body, be acted upon by a pair of plates, the zinc being applied upon one, the silver on the other, the surface beneath the silver rapidly cicatrizes, while that beneath the zinc is in two days converted into a superficial eschar. If the plates be still kept applied, the eschar extends to the subcutaneous cellular tissue, and presents all the characters of a slough produced by caustic potash, except that the dead tissues are a little less compact. After the separation of these sloughs, cicatrization under ordinary applications is very tardy, but is much hastened by the application of the silver plate, the zinc being fixed on some neighbouring part. So long as the zinc plate remains upon an exposed surface, a copious exudation of fetid serum goes on from it, and a dark, soft, spongy slough is produced, which does not clear away for two or three days after the zinc is removed. After the separation of the slough, an excavation is left, and the granulations are healthy. They reach the surface level much more quickly when the silver plate of the apparatus is employed, than under any other treatment. That this good effect is not due to mere pressure of the metallic plate I have become convinced, after comparative trials of the application of the silver, with and without connexion with zinc. I have made numerous trials of the methods of Baynton and Scott, of water and dry dressings, of elastic bandages, and various other accepted modes of treating ulcers, and have found no means so capable of uniformly producing a rapid growth of healthy granulation as galvanism.

3. I have often been astonished at the change effected in twenty-four hours in the condition of ulcers. At one dressing they are seen to be deep cup-like excavations. At the next the granulations have nearly reached the surface. On the third day the surface level of the skin and granulations of the skin are often uniform, the well-known marginal blue rim announcing the commencement of cicatrization. When this point is attained, it is better not to apply the apparatus again, but to employ simple water-dressings, or, if there be any tendency to flabbiness in the granulations, dry lint, and a strap of adhesive plaster. When I was assistant-surgeon in H. M. S. *Hibernia*, a form of contagious circular sloughing ulcer was very prevalent. We used to destroy the diseased surface by undiluted nitric acid, and apply the galvanic apparatus as soon as the slough separated. The men were often allowed to walk about, and suffered no more impediment from the apparatus than from a simple bandage. Much trouble was spared in dressing, as the apparatus was only removed once in twenty-four hours. In that very obstinate form of ulcer naval surgeons are so frequently called upon to treat, called by the men "a burn with a rope," in which coils of rope, twisted round a limb, destroy a ring of integument, fascia, and perhaps muscle, the slowness of the natural process of repair under any variety of ordinary treatment is quite peculiar. I treated a case of this kind when surgeon of H. M. S. *Trafalgar*. The integuments, fascia, with some portions of muscle, were destroyed all round the calf of the leg; the tibia and fibula being laid bare. The slough separated, and an annular ulcer remained nearly two inches in breadth. The man was a long time on the sick list before I applied the galvanic apparatus. Scarcely any signs of a reparative process had appeared when I applied the silver plate of the apparatus to a portion of the ring; and it was quite extraordinary to trace the daily effects as the plate was moved around the large ulcerated surface; the spots where the silver had been applied for only twenty-four hours being far above the level of other parts, and consisting of small conical granulations, in place of the flat, flabby surface which had formerly existed. Cicatrization afterwards took place as readily as in ordinary cases.

4. When the zinc plate is applied upon the superior portion of a very large ulcer, this portion alone improves in appearance, while the inferior portion degenerates; but if the plate be applied upon the lower portion only, the whole surface of the ulcer improves equally.

5. *In cases where* several ulcers exist upon a limb, and the zinc is applied to a

superior, the silver to an inferior one, all the ulcers situated in a direct line between the two plates improve in appearance, become healthy sores, and cicatrize, while those on either side of the current remain unaltered, and sometimes degenerate.

6. When the silver plate is applied upon the extremity of a fistulous sore, the effect does not extend beyond the edges; but if a projecting portion of the silver be carried to the bottom of the fistula, granulation rapidly follows. It is very easy to perforate the silver plate by a screw, the point of which is smooth, and adapted in size and shape to that of the fistula. I found this plan answer admirably in a case of perineal fistula, which persisted long after perfect dilatation of a stricture of the membranous portion of the urethra. In cases of open bubo, with burrowing sinuses, I have introduced a small silver chain to the bottom of the cavity, and connected it either with the plate of the single pair or with the copper end of Pulvermacher's chain. The result has been invariably satisfactory. I saw a case in H. M. S. *Scourge*, of a man who had been eight months on the sick-list from a bubo in this state; yet he was well after the chain had been used for one week only, in the manner I have described, by my friend Dr. Davidson, surgeon to the ship.

7. In several cases, normal innervation has been restored in paralysed parts under the use of this apparatus, the zinc being placed superiorly, and the silver inferiorly, so as to include as nearly as possible the whole of the paralysed part. Disordered function of particular nerves has been also remedied, by so placing the two plates that the nerve lies between them.

8. Whether the single pair of plates, or Pulvermacher's hydro-electric chain, be used, a much better imitation of the natural currents of vital electricity is afforded than by the batteries in common use. The action of the latter is powerful, and only susceptible of temporary application; while that of the former is mild, uniform, and continuous, an electric current circulating continually in the same direction from one plate, or one end of the chain, to the other, through any part of the body which is between the two poles. The single pair of plates never causes any pain or uneasiness to the patient, never producing more than slight itching or numbness; while in many cases where the action is very evident, no sensation whatever is felt. When Pulvermacher's chains are used, the sensations vary with the length of the chain, and the strength of the acid in which it is soaked before application. That I have most commonly used has been only eight links, and soaked in distilled vinegar. Itching or tingling sensations are felt for an hour or two, and are renewed as often as the chain is soaked in the vinegar, but nothing approaching to pain is complained of. With a chain of twenty-four links, soaked in the same acid, the tingling sensation is sometimes so acute as to be troublesome, but still not painful. With regard to the relative advantages of the chains, or the single pair of plates, my present experience would lead me to prefer the plates in ordinary cases of ulcer, where they could be applied without producing painful or injurious pressure. I have found, that even where a chain of eight links was only moistened with water, the current has been too strong, and made an ulcer irritable. On the other hand, the chains have great advantages over the plates when ulcers are situated over bones, or are too sensitive to bear metallic pressure. They are also to be preferred in cases of indolent ulcers in weak persons, as, in such cases, the current of the single pair of plates is too feeble to excite any very speedy influence.

I shall conclude this paper by some short notices of some cases in which the plates or chain have been applied during the year in this ship.

Case 1.—J. B., aged 18, grazed the right shin by a fall. Three superficial ulcers followed, and he was put on the list on the 15th of October. Water dressing was used until the 20th, but no change for the better took place. Pulvermacher's small chain, excited by vinegar, was applied on the 20th, kept constantly fixed, and only removed to be soaked again in the vinegar in the evening. On the following day the ulcers were so nearly cicatrized that it was not thought necessary to re-apply the chain. Water dressing was used, and the sores again degenerated. On the 3rd of November, the chain was applied again near the sore, but, from the slipping of the upper end, in such a way that the current did not pass through it. On the following day no change had taken place, but the chain was re-applied, so that the current should pass through the sore. On the 5th it was very nearly healed. Chain kept applied. On the 6th cicatrization was perfect, and he was discharged to duty on the 7th.

Case 2.—C. H., aged 17, received a wound below the left external malleolus, which was followed by an indolent ulcer. He was put on the list on October 15, and treated in various ways until the 26th without any benefit, when the single pair of plates was applied. On the evening of the 27th, no change having taken place, Pulvermacher's chain was applied. On the 28th half the ulcer was quite filled up and cicatrized, the other half nearly so. On the 29th, the chain having been constantly applied, cuticle had formed in the centre of the ulcer at the exact spot where the metal had been in contact. In order to determine if this were accidental, or owing to the galvanic current, the chain was discontinued, and simple dressing applied. The boy got his feet wet with salt water, and the sore again assumed an indolent, unhealthy appearance. On the 16th of November the chain was applied, but wetted with water only. On the 17th not much effect had been produced, but the surface appeared more healthy. Continue. 18th.—Slight improvement. Wet the chain with acid. 19th.—Cicatrization nearly complete. Continue. 20th.—Cicatrix quite perfect. He returned to duty on the 22nd.

Case 3.—E. H., aged 27, applied on the 3rd of January, with an unhealthy sloughing ulcer on the foot, with inflamed edges. Poultices were first used, but no improvement followed. On the 5th the single pair of plates was applied. 6th.—Sore cleaner. Continue. 7th.—Slough separated. Wet compress only used. 8th.—The wound had again degenerated, and continued to do so until the 10th, when the plates were again applied. On the 11th the surface appeared healthy, but there was a deep, excavated, cup-like ulcer left, which did not appear to fill up. On the 14th Pulvermacher's chain was applied. On the 15th the sore was much contracted in circumference. Continue. On the 20th, the granulations being level with the surface, the chain was omitted, and water dressing used; cicatrization afterwards proceeding naturally.

Case 4.—G. W., aged 19, applied on the 9th November with an open bubo in the right groin, which he had concealed as long as possible. It had opened spontaneously. The edges were inflamed and undermined, the whole surface appearing very unhealthy, with a bloody sanious discharge. Black wash was first applied, then a lotion of diluted nitric acid, with solution of opium, but no improvement whatever had taken place up to the 14th. On that day Pulvermacher's chain was applied, the copper end being connected with a metallic plate which covered the whole exposed surface. It was kept constantly applied during that and the following day. On the 16th there was an appearance of commencing granulation, which, on the 17th, was much more distinct. The chain was still continued. The granulations had reached the surface by the 20th, when it became necessary to open a long narrow sinus, which extended downwards and inwards, and on the 23rd another, which extended outwards. Simple water-dressing was used until the 26th, but no healing process began. On that day the single pair of plates was applied. From this time granulation and cicatrization went on rapidly, the plates being kept constantly applied; but he was not sent to duty until the 20th of December, owing to an attack of diarrhœa.

Case 5.—Mr. D., aged 20, had suffered on the coast of Africa, with an obstinate ulcer on the leg over the middle third of the tibia, and, after being four months on the sick-list of his ship, had been invalided. The ulcer healed in England, but left a large, thin, red cicatrix adherent to the surface of the bone. This gave way when he was in the *Vengeance* on this station, and he was again several months on the list before it healed. On any slight injury to the cicatrix it broke down. He wore a padded metallic plate for protection, but he applied to me on the 30th of April, the old cicatrix being then completely converted into an ulcer three inches in length and two in breadth, with a livid soft surface, and fetid sanious discharge. Various simple and stimulating applications were used without effect. The single pair of plates was applied, but the pressure on the tender surface of the ulcer could not be borne. Pulvermacher's small chain was applied and produced a good effect, but so slight that the large one of twenty-four links was used. After this very rapid improvement took place, and he returned to duty after having been thirty-four days on the list, the ulcer, according to his own statement, having been in a worse condition than when he had been several months on the list on former occasions. He was again on the list in June, September, and November, with the same ulcer, which had *been reproduced once* by the kick of a horse, and the other twice by blows received

on board. On each occasion, the inutility of ordinary applications was proved, and the great benefit derived from the long chain of Pulvermacher was most obvious. The average stay on the list on these three occasions was twenty-two days. The cicatrix is now much firmer, harder, and less adherent to the bone than when he joined the ship.

I might narrate many other cases, but the foregoing appear sufficient to illustrate the statements I made as to the therapeutical efficacy of galvanism in the treatment of ulcers.—*Med. Times and Gazette, July* 23, 1853, *p.* 84.

DISEASES OF THE EYE AND EAR.

119.—ON THE TREATMENT OF IRITIS.

By John France, Esq., F.R.S.

[The first part of the treatment manifestly should consist in preventing the effect of atmospheric vicissitudes upon the eye, and removing, if possible, any foreign body exciting or keeping up irritation. Next, we have to subdue the inflammation, and here, amongst the antiphlogistic measures, Mr. France makes venesection the exception and not the rule. When the inflammatory action is great, and there is good constitutional power, six to twelve ounces of blood may be removed from the temple by cupping. The effects of this proceeding should be first noted, and the necessity of a further abstracrion decided upon.

These measures having been premised, and the intestinal canal having been cleared by appropriate medicine, the next step is to administer mercury in doses proportioned to the severity of the case and the constitutional vigour of the patient. In the syphilitic disease this medicine is, in fact, our sheet-anchor; and where the inflammation is acute, and the degree of power pretty good, calomel should be exhibited in one or two grain doses three times a day, and be persevered with steadily until the gums begin to show signs of the establishment of mercurial influence upon the system, or, which is tantamount to this, until the complaint begins to recede. In either event the dose should at once be moderated, as actual salivation is never called for. Indeed, in the great majority of cases, the effect becomes apparent upon the disease before either the gums, tongue, throat, breath, or salivary secretion betray any evidence of the action of the medicine. We have then no need to push mercury farther; no benefit accrues, but the reverse, from insisting upon the production of its physiolagical effects; its therapeutical effects (if I may be allowed the distinction) are what we require, and what we may very generally obtain quite independently of the other class. To check any purgative action of the calomel, which in syphilitic iritis is undesirable, I consider that the use of chalk mixture is preferable to combining opium with the pills, the latter drug having, it is well known, a tendency to cause contraction of the pupil, which in iritis of all kinds it is so great an object to prevent. In syphilitic cases of milder character, or occurring in subjects of impaired general powers, calomel must be given in smaller doses, and be less frequently repeated. The mercurial part of the treatment is in such instances similar to that which is habitually sufficient in simple and arthritic iritis. Here the exhibition of a grain of calomel, or five grains of mercury pill, or lead pill, night and morning, is commonly the full extent to which mercurials should be carried; and even this quantity should be diminished as soon as the subsidence of the disease permits. When iritis ensues upon an operation for extraction of cataract, mercury must be altogether withheld until the flap has securely adhered, and then (if required) be given in extremely small doses, for fear of preventing or disturbing union. With this exception, the initiatory measures of depletion and the employment of mercury are applicable (with a proviso on the degree of activity requisite in carrying them out) to all species of iritis. The further progress of the treatment is, however, in several respects different in details. In arthritic cases, after the use of the means already spoken of, should there be considerable pain, disturbing the night rest, the extract of conium may be given in doses of from five to ten grains twice or three times a day. Conium seems occasionally to exert quite a specific influence over arthritic inflammation of the eye, so that it may occasionally be exhibited, to the exclusion of

any other except local remedies. Its beneficial influence, however, is not uniformly manifested in an equal degree. Hence the moderate use of mercury is preferable, which should be accompanied by alkalies, saline purges, and colchicum.

When the acute stage has passed, and the complaint is retroceding, a few grains of powdered bark generally assist in re-establishing tone in the vessels, and repressing lingering congestion. At the same time, a corresponding improvement in diet should take place; for at the commencement in every form of iritis, spirits and fermented liquors must be forbidden, and when the patient's age or debility contraindicates his restriction to slops and farinaceous food, at least the quantity of meat allowed should be very moderate.

In thus describing the next course of constitutional treatment, I have not referred to a potent, and sometimes admirable remedy, aconite. The action of the drug is uncertain, and, in incautious hands, it has been productive of serious and even fatal consequences. Hence it is best to reserve aconite for cases which resist the ordinary course of treatment, and continue under constant observation. Under such circumstances, ten minims of the tincture may be prescribed thrice daily, the effects being carefully watched. I have witnessed the greatest benefit from this medicine, but am far from recommending its indiscriminate administration.

In simple iritis there is in general at the outset no call for other internal remedies than mercurials guarded from acting purgatively. In the syphilitic disease, if, as frequently happens, the patient is tormented by racking pain about the globe, forehead, and temple, with nocturnal exacerbations, we may be compelled to prescribe an opiate, and then the compound ipecacuanha powder, or one of the preparations of morphia, is the best. Indeed, should full dilatation of the pupil have been obtained by belladonna, the objection to the internal use of opium falls to the ground, and any preparation deemed best suited to the case may be administered. The benefit of these anodynes is not simply palliative, but by tranquillizing the irritable frame of the patient, and perhaps procuring sleep, they contribute to place his system in a more favourable condition for receiving the curative impressions of other remedies. Much likewise may be done in allaying pain in all forms of the disease by the mercury and opium ointment, or the belladonna liniment rubbed in over the seat of pain around the orbit.

Pain is not unfrequently created by the application of belladonna to the brow in arthritic cases, apparently from the tension excited in the contractile fibres of the membrane affected with rheumatism. Such appears the simplest explanation of the circumstances, for the pain subsides on removal of the belladonna, and is quite of the rheumatic kind.

Notwithstanding this occasional inconvenience, it is right in all cases of iritis, including those of the arthritic kind, to apply belladonna: in the majority of instances its effects prove wholly salutary. When deprived of this most valuable auxiliary, in order to avoid contraction of the pupil as far as possible, we must keep the patient in a darkened room, and abstain from the exhibition of opium. As a general rule, the moistened extract should be smeared night and morning around and over the palpebræ, and be prevented from becoming dry and inert in the interval. I think this mode better while the inflammation remains, than applying a solution of belladonna or atropine to the conjunctiva. In young children it is safer to use the remedy in the form of plaster, to avoid the chance of its being conveyed to the mouth. The utility of this application in the early stages of iritis originates thus: The posterior aqueous chamber, owing to the convexity of the lens, is much shallower towards the axis of vision, or opposite the centre of the pupil (where the posterior wall of the capsule bulges forward, and approaches the plane of the iris), than at the periphery. The more dilated, therefore, the pupil is, the further is its edge removed from the capsule, and *vice versâ*. Hence a dilated pupil is less liable than a contracted one to form adhesions; the adhesions if formed are longer, while of course there is greater probability of saving some portion of a large than of a small pupil from being overspread.

At a later stage the object of applying belladonna is, first, to save any portion of the pupil remaining permeable, and of its margin yet unattached; and secondly, to obtain, if possible, as inflammation subsides, the elongation and eventual rupture of adhesions already formed. And here I must mention incidentally a physiological fact, demonstrated by our occasional success in effecting the liberation of the iris

after adhesion, and by the phenomena which precede such liberation. It is, that dilatation of the pupil is not merely a passive result from relaxation of the force which produces contraction, but is itself an active change. Thus, in a case where adhesions have formed, when the pupil expands under the influence of belladonna, we may notice that the margin of the iris is arched or deeply recessed from adhesion to adhesion, evidently by the exertion of an active dilating power upon the intervening spaces. We see, moreover, that the morbid bands connecting the edge of the iris to the capsule are maintained in a state of absolute tension so long as the belladonna is kept applied, and these frœna remain unbroken. Hence it is plain that dilatation of the pupil is no more a painful state than contraction—an inference confirmed by the occasional rupture of such adhesions and disengagement of the iris, as also by the disentanglement of the membrane from apertures in the cornea, effected by use of the same remedial application, belladonna.

We are more frequently successful in effecting the detachment of adhesions in cases of syphilitic than of arthritic iritis. In the former the adhesions commonly assume the shape of narrow bands at the points where the greatest thickening or tuberculation of the iris has occurred. In arthritic iritis, the inflammation being more diffuse, the adhesions are usually broad, and involve a large part of the margin of the pupil; they possess therefore much greater firmness and power of resistance to the action of belladonna than do those of the syphilitic kind, in which consequently we apply the extract, even in advanced stages of the disease, with better hope.

Mr. Carmichael, of Dublin, introduced the use of turpentine in syphilitic iritis to the notice of the profession some years since. Of its remedial influence in these cases there can be no doubt. I have exhibited it, and had occasion to be satisfied of the truth of this statement. But the medicine is very apt to disagree, and act violently upon the kidney, so that in many instances its administration cannot be persisted in; while, when borne, its power over the disease is inferior to that of mercury. Were we only to give mercury in one fixed dose, repeated at unvarying intervals, then indeed turpentine might often be a more eligible remedy; but as we can adapt the dose of mercury at once to the exigencies of the part and of the constitution, and these are seldom really at variance, we have little need of a medicine which, though sometimes efficacious, is often irritating and distressing, and always uncertain. However, in cases of no great acuteness, which do not yield so readily as expected under mercury, assisted by the remedies above enumerated, there can be no objection to giving the oil of turpentine a trial. A drachm may be given three times a day, or every six hours, made into an emulsion, with milk or almond mixture, the patient being warned of the probability of some little interference with the functions of the urinary organs. Should such inconvenience intervene, we should obviate it, if possible, by quietude and alkaline drink; and this failing, intermit or altogether relinquish the use of turpentine, especially if the urine become tinged with blood, and pain arise in the loins.

As iritis becomes chronic and subsides, the mercury should be further diminished. It must be entirely abandoned when once the external marks of inflammation have disappeared, and vision has regained its former degree of perfection. When we have failed to prevent the formation of a film of lymph within the pupil, still by steady perseverance with an alterative course, assisted by sarsaparilla, with soda and iodide of potassium, or in syphilitic cases with nitric acid, much diminution in the density of the effusion and improvement of vision may generally be effected. When the final failure of these endeavours is certain, though the globe in other respects retains the general indication of health, and the patient is capable of distinguishing the transit of an opaque body before the eye, there is yet a prospect of affording relief by operation. If the other eye be previously lost, such operation is to be recommended. In the chronic stage of all species of the disease, there are no more useful auxiliaries than blisters applied behind the ear or to the nape of the neck, of which situations the former is preferable. Never let a blister be placed on the temple or forehead for the relief of inflammation of the eye, for almost invariably the symptoms will be aggravated by the application, which, from undue proximity to the affected part, becomes a direct instead of a counter-irritant.

You will probably have reason to observe, even in cases checked at an early stage of the disease, the extreme liability which one attack of iritis engenders to another; a little exposure, indiscreet indulgence, and over-exertion of the eye, being often

sufficient to reproduce impairment of vision, vascularity, and dulness of the iris and anterior chamber. These relapses must be promptly met by a modified use of the same remedial measures which were employed in the first instance. Owing to this tendency, a patient, on his recovery, should be cautioned against the imprudent exercise of the organ, or exposure, for any fresh attack contributes in its degree towards ultimate destruction of vision.—*Lancet, Sept.* 3, 1853, *p.* 204.

120.—CASE OF COMPLETE AMAUROSIS FOLLOWING RETINITIS, SUCCESSFULLY TREATED WITH STRYCHNIA.

By Dr. Daniel Griffin, Physician to the Limerick Infirmary.

[This patient, O'Donnell, was a labourer, aged 62. He had been ill previously to admission about five weeks. He had all the symptoms of retinitis, though little seemed to have been done for him except blistering the occiput and vertex, which he blamed for the production of the blindness. His condition is thus described:]

The iris is sluggish in its movements, but unchanged in colour, and shows no depositions on its surface; the pupils of both eyes are perfectly black, and moderately dilated; there is a zone of red vessels round the cornea, extending a considerable distance from its edge, and the conjunctiva is slightly injected throughout; he stands with that staring, vacant look which betokens the absence of all perception of external objects; there is considerable vertigo still, but the pain is abated.

Eight leeches were applied to each temple. He was ordered blue pill, hydrargyrum cum cretâ, nitre, and Dover's powder, in moderate doses, three times a day. On November the 15th, four days after his admission, the leeches were repeated as before, and he was directed to persevere in the use of the powders, which, on the 29th, had produced so little effect that they were ordered to be taken at shorter intervals.

December 1st. There is scarcely any appearance of mercurialization, and the only change observable in the eyes is the removal of the increased vascularity and their return, in this respect, to a healthy aspect: there is not, however, the least sign of returning vision, even hardly so much as the perception of light. As I rather distrusted his statement regarding the length of time he was ill—many persons of his class seeking admission to the infirmary merely for the sake of temporary support—moreover, as I suspected, from the severity of the pain and vertigo, that the affection was associated with organic disease of the brain, I was very much in despair as to his chances, and was about to dismiss him as incurable. On my visit next day, however, he told me he thought there was some slight amendment: I, therefore, directed him to remain, and ordered the following pills, one to be taken every night:—Strychnia, one grain; extract of gentian, six grains; to be divided into twelve pills: the powders to be omitted. December 9th. A decided and considerable improvement; the pills to be continued. 13th. Rather stationary since last report; to take a pill night and morning. 27th. The improvement goes on rapidly. He can see all objects around him with considerable distinctness, and walks much more steadily. January 13th, 1853. Very much improved. 26th. The right eye is perfectly restored, and the left nearly so. He says he can read his prayer-book quite as well as he ever did. Dismissed.

I observed during the progress of this case that the retina recovered its functions, not by a gradual amendment extending over its whole surface, but in parts and patches separately, almost as if these parts had no physiological connexion. It was singular to observe the odd attitudes he threw himself into as the improvement went on, to find out those parts of the membrane with which he could see when an object was placed before him, such as the hand or the finger. In all cases which have their origin in an inflammatory affection, it would seem to be of great importance to remove all traces of inflammatory action, as well as to pay extreme attention to the general health, before the use of strychnia is commenced.

This remedy has long had a high repute in the treatment of amaurosis, yet M. Riberi says, in the cases in which he has hitherto administered it he has derived little or no benefit therefrom. He suspects, however, that in some of these he has not persevered long enough; and remarks, that the successful cases hitherto on record seem to indicate its use in incomplete rather than complete amaurosis. I believe he

always used the endermic method; and, from some published cases of his, he seems to depend more on nux vomica than on strychnia. It is singular to observe what a small amount of this drug is sufficient for success in some instances. The whole quantity which produced a complete restoration to sight in the case of O'Donnell was somewhat short of eight grains, and this spread over a space of about eight weeks, making about one grain per week.—*Dublin Quarterly Journal*, Aug. 1853, *p.* 245.

121.—CASES OF EPIPHORA.

By Benjamin Bell, Esq.

[The term 'Epiphora' is here restricted to a watery state of the eye, produced by some obstruction in the puncta or canaliculi. There is scarcely any affection so trivial which the surgeon undertakes with less hope of ultimate satisfaction; for all know that some cases resist all ordinary measures, and yet present no obvious indication for their treatment.]

Mr. Bowman has pointed out a cause of disappointment which has hitherto escaped notice, and the discrimination of which will probably enable us to diminish very considerably the number of cases in which relief cannot be afforded. The epiphora depends, in these instances, not upon any obstruction, but upon the position of the inferior punctum. There may be little or no eversion of the margin of the lid, but "the natural prominence on which the punctum is placed, is wanting, and, instead of it, there is a flattened or rounded cutaneous surface, on which the orifice may be discerned (though with difficulty) at a little distance from the mucous surface of the lid, and much reduced in size, being in fact never wetted by the tears, but dry and contracted." The more frequent causes of this displacement of the punctum seem to be either a chronic inflammation of the neighbouring conjunctiva causing thickening and slight eversion, or some cutaneous affection of the lower lid. For a fuller illustration of the subject we refer to Mr. Bowman's interesting paper in the thirty-fourth volume of the 'Medico-Chirurgical Transactions.' The treatment consists in slitting up the canal from the punctum to such an extent as to carry back the orifice to that part of the conjunctival surface where the tears are collected. It is necessary, for a few days, to open up the wound by means of a probe, and thus convert the canal into a groove.

The first case in which I had recourse to this proceeding was a lad of sixteen, who had met with a serious laceration of the eyelids some years previously. The healing process had caused a slight displacement of the punctum, without eversion of the lid itself; and the consequence was, that the tears were constantly collecting and standing in the eye, and so producing not only much discomfort, but considerable disturbance of vision. I performed the operation already described, with the effect of completely remedying the evil. The next case was a young female of seventeen, in whom the symptoms were similar, although the displacement of the punctum seemed to have originated in the more common cause of chronic inflammation of the conjunctiva. The same treatment was equally successful.

I may remark in passing, that in performing the little operation, it is of importance to employ a probe large enough to distend and steady the canal. I have since had recourse to a similar procedure under circumstances somewhat different. A lady of middle age had an obstinate vascular induration, involving the punctum and causing a displacement of it, so slight as to be scarcely visible, but sufficient to cause troublesome epiphora when she was exposed to the open air or a strong light. Seeing no speedier mode of removing the inconvenience, I passed a probe along the canaliculus, and then, introducing the point of a fine iris knife, divided the entire swelling. The epiphora ceased, the induration quickly disappeared, and the punctum resumed its functions.—*Monthly Journal of Med. Science, Sept.* 1853, *p.* 210.

122.—ON REMITTENT OR STRUMOUS OPHTHALMIA.

By Henry Hancock, Esq.

[The primary cause of this disease, Mr. Hancock believes to be in not adapting

the food to the digestive powers of the child; and a second to the close, stifling and unwholesome condition of the air in the places where such patients are generally found. Remarking upon the treatment, he says:]

The objects to be desired in the treatment of remittent ophthalmia are, the relief of the organs of digestion, and the correction of the secretions, as when these two points are attained, the other symptoms will improve, and the eyes will share in the general change for the better. To achieve these, however, a systematic plan must be adopted, embracing diet, clothing, good nursing, as well as medicine, otherwise but little benefit will result. Abstract remedies, whether for the eyes alone, or the system generally, are of but little use. As far as I have observed medicine alone will scarcely ever effect a cure; diet alone will rarely do so, although I have seen children, who from improved air, and comfort, and light diet, have lost the intolerance of light without the aid of medicine at all; but these are very rare instances. Very unsettled and varied views have hitherto obtained as to the true character of the complaint, and the treatment consequently has been equally varied and undetermined. Some regard the disease as of a purely local character, to be combated by local applications and counter-irritants; others, again, as depending upon irritability of the nervous system, viewing the photophobia or intolerance of light as cause rather than effect, and requiring sedatives, both locally and generally; others, again, as depending upon disease of the mesenteric glands, or upon gastric irritation or morbid secretions, to be treated by remedies adapted to such condition: whilst most agree in considering it connected with anæmia, cachexia, or general debility; insufficient nutrition, or the want of red globules, urging the employment of vegetable tonics, the various preparations of steel, generous diet, &c. Remittent ophthalmia may almost always be traced to a disordered state of the digestive organs —a want of digestive power, an incapability of properly assimilating the food. The liver becomes sluggish, irregular in its action, and frequently enlarged; the mesenteric glands are enlarged, the secretions vitiated, and the blood consequently becoming impure, the whole system is deranged. The child is pale, weak, and fractious, a torment to itself and every one about it; its appetite is lost, or very capricious, and it is said to be strumous, weak, and delicate: but this condition need not become permanent if the case be judiciously treated; if it be not at the onset erroneously supposed to depend upon cachexia or debility, and treated according to that supposition. The debility is, in most cases, more apparent than real; it is commonly that of irritation or of oppression, rather than of actual weakness. Remove the cause, and the debility will usually disappear *pari passu*.

[Mr. Hancock uses no local applications in these cases, except where the cornea has given way and the iris protrudes—in which case he touches the part with caustic and applies the extract of belladonna round the eye.]

The treatment should commence with an emetic of tartrate of antimony, given as advised by Mr. M'Kenzie—viz., in minute doses, at frequent intervals, until free vomiting is induced; and this should be done in all cases, however attenuated or however stout the child may appear. It has frequently been remarked to me, "Surely you would not order that poor child an emetic, it is so attenuated and starved; its stomach requires filling rather than emptying." My reply has always been, "It may be true that the child has not much in its stomach, but what it has is evidently offensive and unwholesome, and consequently the sooner it is ejected the better." What we desire is to relieve the stomach of its offensive contents, and to render its secretions more natural; to correct and restore the secretions of the kidneys, liver and other glandular structures, and to influence the capillary system generally, so as to improve the condition of the skin and mucous membrane, and to allay the morbid excitement of the nervous system. This is best done by the tartrate of antimony, given as above, and it is very important that attention should be paid to the mode of administering this remedy. The mere inducement of vomiting—the simple evacuation of the contents of the stomach—is not sufficient, unless the medicine, by being absorbed into the blood, is enabled to produce the other results; hence I have not found anything like the same amount of good resulting from the sulphate of zinc, from the ipecacuanha powder, or even from the tartrate of antimony itself, when the latter is given in a sufficiently large dose to cause vomiting at once. The following will be found a very convenient form: Tartrate of antimony, four grains; syrup, half an ounce; cinnamon water, three ounces; distilled water, eight ounces, as a

mixture. For a child under three years of age, two teaspoonfuls of this medicine should be given every ten minutes until free vomiting is induced; above this age, a table-spoonful may be given at the same intervals. It commonly requires four or five doses to produce the full effect—in some instances more, and in a few less. The treatment should be repeated daily until the intolerance of light begins to subside, which it will mostly do after the first or second day, although in some of the more obstinate cases four or even six days will elapse before the desired result is obtained. When, however, this takes place, the emetics should be discontinued, and a powder of calomel and rhubarb or mercury-with-chalk, with compound scammony powder, given every night, or every alternate night, until the tongue becomes cleaner, the abdomen softer and flatter, and the alvine secretions more natural; and as this change takes place improvement of the eyes commonly accompanies it, if attention be paid to the diet at the same time. When the attack has been complicated with eruption, aperients should be continued until such eruption has disappeared.

When, however, the attack of ophthalmia has been preceded by measles, small-pox, scarlet fever, or any other depressing complaint of that nature, or if the child has been exposed to excessive want, is much attenuated, and covered with a cold clammy perspiration, the greatest caution should be observed in the administration of calomel, even in small doses and as an aperient: and in no instance should more than one dose of this medicine be given without the patient being seen, as, should ptyalism take place, such extensive sloughing of the fauces, gums, and even the lips and cheeks, will sometimes ensue, as to destroy the child in a very few days, if not hours. I was sent for, between three and four years ago, to see a child three years of age, who had been labouring under this form of ophthalmia, succeeding measles. The gentleman in attendance had sent six powders, each containing five grains of mercury-with-chalk, directing one to be given thrice daily. The child took four, when profuse salivation set in, with swelling of the tongue, lips, and cheeks. When I saw it on the following morning it was almost in a state of collapse; a gangrenous spot extended from the side of the mouth over the cheek; there was scarcely any pulse to be felt at the wrist, and the surface of the body was cold and clammy. The child died in a very few hours. The late Dr. Clendinning related a case to me in which the child had suffered from measles and subsequent affection of the lungs, and who, in addition, had been exposed to great hardship during a sea voyage. The Doctor had prescribed a single dose of mercury-with-chalk and rhubarb, and this produced similar mischief, and was attended by the same unfortunate results.

In cases accompanied with extreme attenuation and cold clammy state of the skin, it is safer to abstain from calomel altogether, and to substitute the compound scammony powder with taraxacum and henbane; or if mercury should from any reason be especially indicated, to combine it with the sulphate of quinine, but in no instance should the medicine be pushed with the view of producing ptyalism. After the bowels have been thoroughly cleansed by aperient medicines, Mr. Lawrence advises the employment of tonic medicines, of which he considers bark the best, and quinine the most advantageous form, entirely agreeing with Mr. Mackenzie, who says, "in most cases quinine has acted like a charm, abating commonly in a few days the excessive intolerance of light and profuse epiphora, promoting the absorption of pustules, and hastening the cicatrization of ulcers of the cornea." He adds, quinine may be used as soon as the stomach is cleansed by an emetic, and the bowels put to rights by repeated doses of calomel and rhubarb; but when the pulse is very quick, small doses of tartrate of antimony are preferable; or when impetiginous eruption, then a course of purgatives. He also adds, that in pallid and languid subjects steel may be given with advantage, recommending the carbonate or tartrate of iron, tincture of muriate of iron, wine of iron, or the latter combined with dilute sulphuric acid. Dr. Henry Williams considers the sulphate of beberine much superior to the sulphate of quinine, not only because it is cheaper, but because it is less likely to excite the circulation or affect the nervous system. The dose is two grains night and morning.

I do not estimate these remedies so highly as Messrs. Lawrence and Mackenzie appear to do. I have so frequently seen relapses follow their exhibition that I attribute the intractability which has usually characterized remittent ophthalmia in a great measure to their employment, and the general management as to diet, &c.,

which naturally accompanies them. The same degree of caution is necessary in the use of tonic medicines in this disease as in remittent fever, and, from what I have observed, I believe they never should be given whilst photophobia exists, or in the common and ordinary forms of the complaint, as it appears to me that their employment is based upon wrong principles, founded upon erroneous notions of the pathology of the disease, and prejudicial by causing relapse, prolonging the duration of the attack, and thus doing considerable mischief. It should be borne in mind that lassitude and weakness are not the causes of remittent ophthalmia any more than they are of remittent fever; they are consequent upon the causes producing the disease, and are just as much effects as the ophthalmia itself. If we overlook this fact, if we endeavour to build the patient up by tonics and strengthening diet, we defeat our object, we increase the lassitude and debility by oppressing the patients by our remedies, since their digestive organs have not the power of assimilating medicines of this description: if, on the other hand, we try to remove the oppression which is bearing the patient down; if we confine our attention to the improvement of the digestive functions and the correction of the secretions, we find that the symptoms of lassitude and weakness gradually disappear, the morbid irritability of the nervous system and intolerance of light subside, and the child improves in health and spirits; after the tongue has become clean, the secretions more natural, and the intolerance of light has been subdued by emetics. In those extreme cases where sloughing of the cornea has set in, or where the complaint is accompanied with profuse perspiration, and the attacks assume the paroxysmal or intermittent character, quinine may be employed with advantage, but even under these circumstances its effects should be cautiously watched, and it is better to combine it with some gentle aperient.

In those cases in which there appears to be a want of the due proportion of red globules in the blood, steel may be given when the urgent symptoms of ophthalmia have subsided, but not before. In exhibiting this medicine, I am guided principally by the appearance of the tongue, gums, and inside of the lips. When the tongue is tremulous, and with the gums and inside of the lips paler than natural, I have found steel useful, but not so when these parts present the opposite character. I do not consider mere pallor of the countenance as any criterion of the utility of this medicine. The preparation which I have found to agree best is the tincture of iron prepared by Mr. Boutell. The remedy upon which I place the greatest reliance to complete the cure is the hydriodate of potass in doses of from half to one or even two grains thrice daily, according to the age of the patient, and in combination with the tincture of iodine, as advised by Lugol. I do not attribute the benefit resulting from this medicine in any degree to its supposed specific influence over scrofula, but rather to that which it exerts upon the stomach and intestines, exciting appetite and promoting the gastric functions, at the same time stimulating the absorbents to activity, whilst its supposed effect upon the nervous plexuses, and great sympathetic nerve, extending to the lenticular ganglion and ophthalmic division of the fifth and sympathetic branches of the eye and orbit, may increase its efficacy in this disease. It should not, however, be employed until after the intolerance of light has yielded to the emetics and alteratives; but when so administered it will be found a most valuable agent, as, by correcting the original cause of the disease, it holds out the most favourable prospect of destroying the tendency to relapse, which is one of the chief characteristics of this complaint, and so disheartening to all concerned. In those instances where the remittent ophthalmia attacks children of a decidedly strumous habit of body, cod-liver oil may be advantageously substituted for the hydriodate of potass, after this medicine has been given for a week or ten days. It may be given in doses of one drachm twice daily, but always after a meal, as upon an empty stomach it is liable to cause sickness. Where the child is highly nervous and excitable, henbane, in tincture or extract, thrice daily, in doses proportionate to the age of the individual, is very useful, but, like the hydriodate of potass, should always be preceded by emetics and alterative medicines.

Dupuytren prescribed belladonna either in powder or extract; of the extract he ordered one to three grains, divided into six pills, two to be taken every hour; of the powder, one to four grains every hour, and, to prevent narcotism, he gave the artificial seltzer water. Dr. Kopp strongly recommends the conium maculatum in the following form:—Extract of conium, four drachms; cinnamon water, two

ounces; dose for a child two or three years old, four drops thrice daily, to be increased one drop daily. Whilst Dr. Spengler advocates the coneine, or active principle of conium, one sixteenth part of a grain in six ounces of water: dose, one drachm thrice daily.

I have never employed this preparation; but I prefer henbane either to belladonna or conium, as being more certain in its effects, and I usually prescribe the extract in doses of from one to five grains thrice daily, according to the age of the patient. At the same time it must be admitted that henbane merely acts as a palliative, soothing excitability and irritation when set up; it does not strike at the root of the mischief in the same way as the hydriodate of potass, and consequently we cannot be surprised at the frequency with which relapse attends its exhibition. Like quinine, it requires watching, and we should carefully provide against torpor of the bowels, which will sometimes ensue.

Other cases occur in which the presence of worms in the alimentary canal keeps up the symptoms, which will not yield to the usual treatment. A dose of turpentine and castor oil answers extremely well under such circumstances, and this may be repeated if necessary.

Again, attention should be paid to the state of a child's mouth and teeth. Intractable cases will frequently improve after the abstraction of a decayed tooth, or the lancing the tense inflamed gum over a tooth pushing its way through. In many instances the overcrowding of the teeth is the cause of much suffering, the jaw being too contracted to admit of their due and regular development. This is often very prejudicial to the ophthalmic symptoms, and is only overcome by the abstraction of one or more of the teeth, which, affording sufficient space to the remainder, removes the cause of irritation.

[Mr. Hancock has no faith whatever in any form of counter-irritation, but strenuously urges the regulation of the diet, which should be of the plainest character. He states that severe relapses have returned after a hearty solid meal.]—*Lancet, July* 30, 1853, *p.* 91.

123.—ON PURULENT OPHTHALMIA IN THE INFANT.

By John F. France, Esq.

[In the infant this disease is easily diagnosed. When it appears within a week after birth, when the lids are of a vivid red colour and so swollen that they are separated with difficulty, a purulent fluid escaping, and the conjunctiva inflamed and chemosed, there can be no doubt of the nature of the complaint. In catarrhal ophthalmia there is not so great inflammation, the secretion is not purulent, and there is no tendency to œdema of the lids or chemosis of the conjunctiva.]

The treatment of infantile purulent ophthalmia consists in the following measures:—Should inflammation be very severe, the tumidity of the palpebræ and conjunctiva excessive, and every indication of intense vascular excitement be present, it is right to deplete to a small extent by scarifying the conjunctiva with a lancet. From two or three superficial strokes a sufficient flow of blood will be readily obtained by fomentation. But cases demanding direct depletion are exceptional; the immense majority, formidable as they are in appearance, are perfectly controllable by other means. The bowels must be freed by a purgative combined with some preparation of mercury. I generally prescribe for this purpose the grey powder with rhubarb, which usually effects all that is wished in the first instance—viz., to procure free secretion along the intestinal canal and from the glands associated with it; a slight laxative action should be maintained subsequently by castor-oil. The whole constitutional treatment is comprised in these simple measures; and the local is scarcely more complex.

We must first enjoin thorough cleansing of the eyes from all purulent secretion by tepid ablution. The sponge, I will here remark, should on no account be used for any other purpose, as the disease is highly contagious. Ablution should be repeated at least every hour, the upper lid being gently detached from the lower; the warm water suffered to flow between them, and wash away all accumulated discharge. You can hardly be too precise and earnest in enjoining the observance of these points, for their neglect diminishes in a serious ratio the chances of perfect

recovery. The use of a syringe is advantageous for the purpose of effectually cleansing the surface of the conjunctiva, and may be recommended accordingly when there is reason to think it will be intelligently and carefully handled. In the larger number of cases, however, among the poor, it is safer to direct simply thorough sluicing between the lids, as just described. This plan is quite adequate to accomplish the object in view, and is free from the chance of splashing morbid secretion into the eyes of the attendant—an accident which an ill-managed jet of fluid from a syringe might cause.

Subservient to the prime object of removing all discharge is the use of some unirritating ointment to obviate agglutination of the palpebræ, and prevent accumulation of the purulent matter during sleep. Spermaceti or zinc ointment may with this view be smeared along the edges of both palpebræ and upon the surface of the lower one, which is often overlapped by the tumefied upper lid. Having thus secured a free outlet for discharge, and relieved the conjunctival surfaces from the purulent and lachrymal secretion, the next point is to employ a collyrium. That which I have found of the greatest service, and habitually use, is a solution of nitrate of silver, a grain or a grain and a half being dissolved in the ounce of rose-water. Two or three drops of this should be instilled upon the conjunctiva three times daily, the part having been first cleansed from all matter which may have gathered since the last ablution. Continuing this application for four or five days, you will find the eyes so lately streaming with pus and intensely inflamed, gradually assuming a less angry aspect, the swelling diminishing, the discharge rapidly lessening, and the affected organ returning progressively to the state of health.

As soon as all chemosis has disappeared, tumefaction of the integuments has abated, and the quantity of purulent secretion declined, it is advisable to diminish the frequency with which the nitrate of silver collyrium is used. At a still later stage of convalescence it may be changed for a solution of sulphate of zinc. The compound zinc collyrium of our 'Guy's Pharmacopœia' is eligible at this period of the disease. Its composition I have previously mentioned—viz., sulphate of zinc, two grains; opium wine, two drachms; and rose water, six drachms. The reason for substituting this, as early as the circumstances of the case will permit, for the nitrate of silver drops, is to avoid the chance of discolouring the conjunctiva. The possibility of such discolourization is not for a moment to be weighed in the scale against the striking utility of this collyrium, yet it does constitute a sufficient ground for discontinuing it when the complaint is unquestionably subdued. A solution of alum (three grains to the ounce) may be employed in the same way as the compound zinc collyrium, to conclude the cure which the nitrate of silver has brought about. Other astringent solutions as well are, I believe, sometimes used instead of the nitrate of silver collyrium from the beginning, but I would emphatically dissuade you from trusting to them. This is not a disease with which it is justifiable to experiment or temporize. With the fullest confidence I can recommend the plan of treatment above described, because I have always found it successful; and I deprecate resort to other means, because the uncertainty of them is evident from the unsuccessful cases every now and then applying too late at our Eye Infirmary.

When the cornea is found to be hazy or opaque the treatment does not essentially differ from that already described. If it be ulcerated the only addition indicated is greater care to avoid the slightest pressure on the globe in examination, or in the processes of ablution, and injecting collyria; but, if the ulceration has extended through the laminæ of the cornea, and opened the anterior chamber, a point of nitrate of silver may be sometimes advantageously applied, to excite healing action at the bottom of the ulcer and procure quicker closure of the opening.

If the iris has prolapsed, or there is reason to expect that it will do so, owing to the depth to which an ulcer of the cornea has advanced, it is proper to apply belladonna around the orbit, with the view of obtaining dilatation of the pupil and consequent retraction and disentanglement of the iris. The application of belladonna would supersede that of caustic, if the prolapse were quite recent, until the iris should have withdrawn from the corneal aperture. The nurse, however, must be directed to prevent any belladonna reaching the mouth of the little patient, either by means of the discharge, or its own fingers, or the mother's breast. The best mode of guarding against so serious an accident is to apply the extract by simply smearing it over the inner portion of two rings of soap or resin plaster, which may then be

placed so as to surround the patient's orbits. These must be renewed or moistened twice a day.

After all morbid discharge has ceased, the case has become chronic, and any ulcer which may have existed has closed or shows a disposition to do so, the black wash, composed of seven grains of calomel to an ounce of lime water, is extremely useful, promoting cicatrization, and tending to disperse the hazy opacity which always surrounds a cicatrix. Some degree of opacity may result from the inflammation to which the cornea has been subjected, independently of ulceration; and in such cases likewise, in their chronic stage, the black wash is beneficial.

If destruction of the entire cornea has taken place, it can be of no avail in restoring vision to apply nitrate of silver to the part, or belladonna to the brow; the treatment then becomes merely palliative, and the only remaining object is to relieve the conjunctival inflammation and control the deformity which ensues.—*Lancet*, *April* 30, 1853, *p.* 401.

124.—THE CURE OF SQUINTING BY THE USE OF PRISMATIC SPECTACLES.

By T. Spencer Wells, Esq.

[This method of treating squinting was first recommended by Dr. Kurke, a Dutch physician. The following remarks are a summary of the experience of Dr. Von Grafe, of Berlin, who has tried the plan very extensively:]

The glasses are fitted in ordinary spectacle frames. They are simple prisms of various degrees, from 1 to 20. It would be possible to make them achromatic; but I have only seen the ordinary ones in use.

The operation upon the sound eye, as explained by Dr. Von Grafe, is as follows: When a prismatic glass is held before one eye on any point of sight in the converging direction of the optic axis, the light falling upon this eye is diverted from its former course, and no longer arrives upon the macula lutea, but forms a more or less excentric picture, according to the refracting power of the prism. From its position, this is no longer combined with the central picture on the other retina into one perception, but is perceived separately. Thus the object upon which the optic axes converge is seen double.

Theoretically this phenomenon should be observed when a prism of very moderate power is used; but observation teaches us, on the contrary, that no diplopia follows when weak prisms are employed, especially if the base be directed outwards. This might be explained in two ways. Either the picture on one retina is suppressed, or the eye which sees through the prism takes a new position, which is not perceived by the observer, so that the picture is not formed excentrically, but falls, like that of the other eye, upon the macula lutea. The improbability of the first supposition at once appears from the fact that no diplopia is produced by weak prisms, while more powerful ones produce it at once, and the greater the excentric position of the picture the more easily it would be suppressed. The truth of the second explanation is established by a more exact observation of the position of the eyes. On applying the prism we see the optic axes deviate from their former position and return to it as the prism is removed. At the moment of removal the object is seen double, because both axes are not directed upon it. Thus, in order to prevent diplopia, an involuntary strabismus occurs, and we can produce this in any direction by corresponding positions of the prism, but most decidedly so inwards, less so outwards, much less so downwards, and least of all upwards. We can also produce strabismus in this manner in diagonal directions.

It follows that by the use of prismatic glasses we have the power of altering the tension of any given muscle of one eye without producing any alteration in the other. This is the peculiar advantage which none of the ordinary orthopædic means formerly employed possessed. On the contrary, the result hoped for from their employment was not only frequently frustrated by the movements of association of the two eyes, but sometimes, as in cases of recent muscular paralysis, an effect directly the reverse of that desired was brought about.

The increased contraction called for from the relaxed muscle by the use of prismatic glasses is the source of their curative power. For example, in a case of con-

vergent strabismus with diplopia, a prism with its base directed outwards, alters the position of the excentric picture on the retina of the squinting eye so greatly, and brings it so near the macula lutea, that single vision follows any voluntary power conveyed to the abductor muscle. Consequently, the angle of the squint is somewhat diminished. As it becomes less, and the power of the abductor increases, prisms must be used gradually diminishing in power, until at last a perfectly accurate corresponding position of the eyes is attained at all distances,—in other words, the squint is perfectly cured. I have seen patients of Dr. Von Grafe's who were thus completely cured in about six weeks, commencing with strong glasses of the numbers from 15 to 20, and gradually wearing them less and less powerful. They are principally applicable in young persons, who squint but slightly; and in cases of diplopia biocularis, where the abnormal position of one eye is only observed when an object some feet distant is regarded, they are the only certain means of cure.

In more marked degrees of strabismus the muscle must be divided, because the use of strong prisms, and the efforts of the patient to avoid diplopia, become very troublesome; and if the union of the two images causes too great an effort, an effect is produced exactly the opposite of that desired; for if the diplopia cannot be removed, the double images separate still further from each other, because, when distant, they are not so intolerable as when near.

In many cases after operations for the cure of strabismus by division of the muscle in one or both eyes, although great improvement follows, the cure is not perfect. Some degree of squint still persists in one eye, and probably some diplopia when objects at certain distances from the eye are attentively regarded. In such cases, the prismatic glasses suffice to complete the cure commenced by the operation. I saw several instances in which this proved to be the case in the practice of Dr. Von Grafe.

I have patients under my care at present who are wearing these spectacles, and I shall take a future opportunity of making the results known. Messrs. Watkins and Hill, opticians, of Charing-cross, have had the glasses ground and fitted for me, and make them at any angle which may be required. Messrs. Bland and Long, of Fleet-street, also make them.—*Med. Times and Gazette, August* 27, 1853, *p.* 216.

125.—ON THE USE OF TWO NEEDLES AT ONCE IN CERTAIN OPERATIONS ON THE EYE, ESPECIALLY THOSE FOR CAPSULAR CATARACT AND ARTIFICIAL PUPIL.

By William Bowman, Esq., F.R.S.

The operation consists in the simultaneous employment of two needles introduced at different points through the outer coat, and made to act in concert upon false membranes, opaque capsule, or iris, or even on the lens itself under certain circumstances. Several advantages attend this mode of operating. Opaque portions of capsule are often very tough, and, being attached to the suspensory ligament of the lens, or to the pupillary borders of the iris, these extensile structures readily allow the opaque membrane to recede before the needle, rather than be torn or cut through, and the surgeon vainly sweeps the membrane before the instrument from side to side, at the risk of serious injury, and consecutive inflammation of the ciliary processes or iris. Two needles, brought to bear upon the opaque capsule from different sides of the cornea or sclerotica, furnish each other with a point of resistance, and the capsule may be torn open or cut at pleasure. If it be reticulated, it is possible to twist one of the needles round and round the band so as to get a hold upon it in case it should prove very tough. The needles usually act perfectly if passed through any convenient opposite points of the margin of the cornea, the pupil being always, where possible, dilated by atropine. It is but seldom desirable that one of the needles should be passed through the sclerotica. Both the hands of the operator being engaged, it is necessary that the lids should be held open, either by an assistant or by the wire speculum. The second needle may be used in cases where the first, or single needle, has failed to cut through the capsule. The instruments are the ordinary cataract needle, the stem cylindrical and of a size to easily occupy *the corneal puncture*, the point either straight and cutting, or slightly curved, accord-

ing to circumstances. In no case is it necessary to enter the instrument beyond half an inch in depth; the stem may therefore be made thicker from this distance. This plan of operating enables the surgeon to cut through softened and rotten iris, without dragging it from its attachment, and otherwise injuring the interior of the globe. Mr. Bowman has used it successfully in the formation of artificial pupil.—*Lancet, June* 11, 1853, *p.* 545.

126.—ON THE USE OF AN ARTIFICIAL MEMBRANA TYMPANI, IN CASES OF DEAFNESS, DEPENDENT UPON PERFORATION OR DESTRUCTION OF THE NATURAL ORGAN.

By Joseph Toynbee, Esq., F.R.S.

[As a test of the merit of Mr. Toynbee's ingenious invention, we need only observe, that it has obtained the medal of the Society of Arts. He thus describes it:]

The artificial membrana tympani made by Messrs. Weiss, from these directions, has hitherto been perfectly successful. As supplied by them, the portion of vulcanized India rubber or gutta percha is about three-quarters of an inch in diameter, which leaves sufficient margin for the surgeon to cut out a membrane of any shape that may seem to him desirable, and to leave the silver plate either in the centre or towards the circumference, at his discretion. The silver wire is of sufficient length to admit of the membrane being introduced or withdrawn by the patient, but is not perceived externally, except upon especial observation. A second kind of artificial membrane is made, by fixing the layer of gutta percha or vulcanized India rubber between two very delicate silver rings, from the eighth to the sixth of an inch in diameter; these rings are riveted together, leaving a portion of the membrane drawn moderately tense in their centre; a margin of the membrane is also left beyond the circumference of the rings, so as to prevent the latter being in contact with and irritating the tube of the ear. To the surface of one of these rings the silver wire is fixed by two branches, and they should be joined, so that the outer surface of the rings should look obliquely outwards and forwards, instead of directly outwards, thus imitating the direction of the natural membrana tympani. This kind of membrane is often preferable to that previously described, if the meatus is sufficiently large to admit of its passage. A pair of forceps is made, whereby the artificial membrane can be more easily introduced and withdrawn.

[The following remarks are very interesting:]

The cases in which the artificial membrana tympani is of the greatest benefit are those where there is a well-defined aperture in the natural membrane; or, if it be entirely absent, where there is simple hypertrophy of the mucous membrane of the tympanum, with or without discharge from its surface. In these cases, it will be found that the organ has by no means entirely lost its power of discerning sounds; as a general rule, the human voice is heard when the mouth of the speaker is situated within about a foot of the patient's ear, and when the sounds are spoken slowly and distinctly. The diminished power of hearing just noticed, while it entirely excludes the sufferer from the advantages of general conversation, is, however, greatly aggravated when, to the affection of the membrana tympani and mucous membrane of the tympanum, the stapes has become anchylosed to the fenestra ovalis, or the nervous expansions have been injured. In such cases where the patients require to be shouted to close to the ear, the artificial membrane will not prove of any service.

The Mode of Applying the Artificial Membrana Tympani.—As in cases of perforation or destruction of the membrana tympani there is so frequently catarrhal inflammation of the mucous membrane of the tympanum, it is obviously important that no foreign substance should be placed in contact with that membrane; and, as there is always a margin of the membrana tympani remaining, the object of the surgeon should be to keep the artificial membrane external to the latter. After carefully noting the size of the inner extremity of the meatus to which the natural membrana tympani was attached, the operator should then cut the artificial membrane as nearly of the size and shape of the natural one as possible, taking care at the same time to keep the margin quite smooth and regular. The patient must then

be placed with the head inclined to the opposite shoulder, while a strong light is thrown into the meatus, which, if liable to discharge, should have been previously syringed. The operator will now take the artificial membrane, and, having moistened it with water, pass it, by means of the silver wire, gently inwards, until it has reached what he considers the natural position. This he will ascertain by the occurrence of a faint bubbling sound, caused by the escape of the slightly compressed air beyond it; he will also feel a slight obstruction offered to its further passage by the remnant of the natural membrane. Should he attempt to pass the artificial membrane beyond this point, the patient will complain of pain, which until then had not been felt. The most certain test, however, of the artificial membrane having been properly placed is the sensation of the patient, who discovers, by the sound of his own voice, or that of the surgeon, or by the movement of his tongue and lips, that his hearing has been suddenly much improved.

It will be imagined, that great care must be taken to cut the membrane so that it shall fit the inner extremity of the meatus with exactness; since, if too large, it would cause discomfort, and if too small it would not fulfil its purpose of rendering the tympanum an air-tight cavity. It is not easy, in all cases, to fit the artificial membrane exactly to the inner extremity of the meatus, so as not to allow of any communication between the air in the tympanum and that in the external meatus; this is, however, the object which should always be sought to be attained. At first, the patient should be instructed not to use the artificial membrane for more than two hours daily; and, if he complains of an uncomfortable feeling, one hour, or even half an hour, will be sufficient.

It would, perhaps, be expected, that the contact of a foreign body, like the artificial membrana tympani, with the wall of the external meatus, would soon become intolerable. Such, however, is not the case; and several patients have left my room without being able to say, from the sensation in the ear, whether any foreign body were there: many have now worn this apparatus daily during several months, without having suffered the slightest pain. The explanation of this circumstance may be found in the fact that the most sensitive part of the meatus externus is about its centre, the membrane in the immediate vicinity of the membrana tympani not being so abundantly supplied with nerves; another explanation is, that the circumference of the artificial membrane presses with extreme gentleness against the wall of the meatus.

The results of the application of the artificial organ have been much more satisfactory than I had reason to anticipate. I have already used it beneficially in nearly fifty cases.—*Med. Times and Gazette, July* 9, 1853, *p.* 45.

MIDWIFERY,

AND THE DISEASES OF WOMEN.

127.—ARTIFICIAL DILATATION OF THE OS UTERI.

By Dr. T. E. Rawson.

[Although Dr. Rawson is no advocate for meddlesome interference in cases of labour, he gives the following example of the value of artificial dilatation of the os uteri:]

A few years ago, I was sent for on the Tuesday morning to attend Mrs. B., living about six miles from my home. She was a rather stout person, of dark complexion, had been married about twelve months, and was *fifty years of age*. She had, moreover, lost one leg, and this was her *first child*. On my arrival, I was informed she had been suffering severe and regular pains for several hours. On making an examination, I found the pelvis well formed and roomy, but the os uteri was *rigid and firmly closed*. Her pains, which were strong, recurred about every seven or ten minutes. After staying several hours, without observing any relaxation of the os uteri, I left her, but was summoned to her again the same night. I found matters precisely in the same state, but she had become impatient and dispirited. I bled her in the arm in a full stream to syncope, hoping by this means to induce relaxation of the os uteri, but without effect. Her bowels were relieved by castor oil, and the next morning I gave her a full dose of opium, and left her. In the evening of Wednesday I visited her again. The pains had not diminished in force or frequency, but the os uteri had not as yet given way in the least. She had, however, become much more hopeful and cheerful, as I had before assured her there was no danger, and that it was a mere question of time and patience. She had had short intervals of sleep between the pains, and her appetite had much improved. I now gave her repeated doses of tartarized antimony, keeping up a constant nausea, but still without any relaxing effect on the os uteri. On the Thursday morning I had her placed in a warm bath, but to no purpose. I therefore ordered her to continue the nauseating doses of antimony, and again left her till the evening. I then found her still in the same general condition, hopeful, and without any symptoms of exhaustion. The pains were still strong and regular; no change in the os uteri.

What was to be done? I resolved on trying the effect of artificial dilatation. After some time, and with considerable difficulty, I succeeded in introducing the point of the index finger through the os uteri, then two fingers, and subsequently all the fingers and thumb conically disposed. By patient perseverance I gradually dilated the os uteri to the size of a crown piece; I then left her for the night, and on Friday morning, found the membranes and head slightly protruding through the os. I then ruptured the membranes and gradually increased the dilatation, slipping the os uteri back to the broadest part of the head. No further progress was made during Friday, though the pains continued unabated in force and frequency. During Saturday, I gave her frequently repeated doses of ergot of rye, which had some effect in increasing the expulsive efforts of the uterus, but by Sunday the head of the fœtus had only reached the brim of the pelvis. After some little further progress had been made in the second stage I applied the long forceps and slowly removed a large, healthy, and living child, on Monday morning. The mother made a rapid recovery, after one of the most tedious labours on record, having lasted about 150 hours!

I think it will be admitted that in this case artificial dilatation of the os uteri was not only justifiable, but was the only alternative under the circumstances. This instructive case proves how little *mere tediousness* constitutes an element of danger in labour. Probably the bleeding and the other antiphlogistic means prevented any febrile or inflammatory action. This case also exemplifies the great powers of endurance of nature, when there are no special mechanical impediments. The pains

never diminished in force from the beginning; the pulse retained its fulness, and the system its general powers to the last, except during the action of the antimony. She was more cheerful and hopeful, and enjoyed a better appetite on the last day than on the first.

I have met with some few cases where the os uteri, only partially dilated, has been carried down even through the os externum; in such instances there can be no doubt of the propriety of artificial dilatation.—*Lancet, July* 23, 1853, *p.* 86.

128.—A CASE OF PLACENTA PRÆVIA, IN WHICH GALVANISM WAS EMPLOYED.

By W. Boyle Chavasse, Esq, Resident Surgeon-Accoucheur to the General Dispensary, Birmingham.

[On March 21st, 1853, Mr. Chavasse was called to see a case of violent flooding occurring in a poor, half-starved, debilitated woman. She had been in destitute circumstances for some time. She was in the eighth month of her sixth pregnancy. She had commenced flooding a month before, and had flooded four times since. When Mr. Chavasse arrived, she appeared almost in articulo mortis. A slow oozing was still going on.]

The uterus was baggy and flaccid; the os was dilated to little more than the size of half-a-crown, and was rigid and undilatable; it lay very high up, the placenta occupying its whole circumference; there were no pains. In her exhausted state, turning seemed contra-indicated, for she would not have borne the shock; and again, the os was undilatable, but this last state might have been remedied by plugging the vagina, and waiting: in all cases of plugging, however, some blood must necessarily be lost before the plug acts, and in her case the loss of a few ounces more would certainly have placed her in a very precarious state. I, therefore, introduced two fingers into the uterus, and carefully separated the placenta throughout its whole extent, leaving the membranes unruptured. The centre of the placenta did not correspond to the centre of the os,—the head presented. Two scruples of ergot of rye infused in hot brandy and water were next given, and after waiting a quarter of an hour for the action of the drug, I, with some difficulty, managed with the point of a lead pencil to perforate the membranes just beyond the anterior margin of the placenta, making only a small opening, so that the escape of the liquor amnii might be gradual, and the disturbance of the balance of circulation avoided. The ergot soon after acted, and the uterus contracting, slowly expelled the liquor amnii, and firmly embraced the child.

The ergot did not give rise to any distinct pains, but produced a state of tonic contraction. Some hot milk, in which two eggs had been beaten up, and mixed with brandy, was then given. Mr. Lakin shortly after arrived: she had by this time slightly rallied; her pulse was small, frequent, and intermitting; her extremities still cold; her breathing easier.

We now determined to give her another dose of ergot; this time its action failed altogether, it produced neither pains nor contractions; indeed I think it rather prostrated the system more, for shortly afterwards she fell into a state similar to that in which I first saw her, in which the collapse seemed even to threaten death. At times she was so much exhausted that I thought, in spite of all my caution, some portion of the placenta must still remain attached, and that internal hemorrhage was going on.

The os was now more dilatable and dilated, and I endeavoured to pass my hand into the uterus and remove the placenta, but there was considerable tonicity of the uterus, and the head of the child was firmly pressing against the placenta, so that it could not be removed without the employment of considernble force. A portion of the anterior margin, however, was brought down into the vagina—it was very friable.

On consultation, we determined not to remove the placenta, for it was doubtful whether she could even bear the force we must necessarily use, now that the liquor amnii had escaped, and the uterus had contracted. We, therefore, resolved to wait for the pains.

She began soon afterwards to wander in her mind, and became very restless, *throwing her arms* about, and sighing, and whenever we spoke to her or touched

her, she begged us to leave her alone and let her die quietly. She continued in this state until five o'clock, when Mr. Lakin, having been obliged to return home, on his way back met Dr. Heslop, and mentioned the case to him, speaking of the exhausted state of the woman. Dr. Heslop recommended galvanism. I must confess I was at first somewhat sceptical as to its influence, for I thought that Dr. Simpson in his six cases had fully proved the inefficacy of this agent. I went home, nevertheless, for the apparatus:—that which we use at the dispensary is one of Gore's large electro-galvanic machines, containing twelve cells. While we were preparing the apparatus the patient vomited several times; we only used six of the cells; one of the conductors was placed up the vagina in contact with the anterior margin of the womb, the point of the other externally over the fundus. Now that the galvanic circle was complete, she complained that we were cutting her, and running things into her. After we had applied it for ten minutes it was extraordinary to see how her system rallied, her face lost its corpse-like aspect, her eyes brightened, her mind no longer wandered, her pulse was plainly perceptible at the wrist; but its effect upon the uterus was still more remarkable: the hand placed on the fundus felt the womb rise and contract until it became hard as a board; and when the galvanic circle was broken by removing the conductor from the fundus the uterus was left firmly contracted.

After continuing the galvanism for half an hour her nervous energy was so much rallied that we thought the ergot might now be serviceable; we, therefore, administered some mixed with a little brandy, but it did not remain long on her stomach, for in less than ten minutes she vomited it up. We continued the galvanism for two hours, when the pains came on spontaneously; by this time the uterus had descended much lower, more of the placenta passed into the vagina; one piece, the size of a walnut, was broken off by the pains and came away. The head of the child was felt endeavouring to ride over the anterior margin of the placenta, and the uterus was dilated to the size of the bottom of a wine glass.

We left her now, directing that we should be sent for when the pains became more urgent, or should the flooding recommence.

In an hour and a half we were sent for—we found the child's head in the hollow of the sacrum, beginning to press against the perineum; the pains were strong, and in a quarter of an hour she was delivered. The child had a strong corpse-like odour, which leads me to conclude that it had been dead previously to the separation of the placenta. Its face, lips, and surface generally, were blanched and colourless; the placenta immediately followed the expulsion of the child—it had been pressed into the hollow of the sacrum, and ridden over by the head during the passage of the child. No clots followed, proving that there had been no internal hemorrhage, as I at one time feared. The uterus was felt in the abdomen firmly contracted. She was bandaged up tightly, and a dry doubled sheet was placed underneath her. In a fortnight afterwards, she was still in a very anemic state, but was gradually improving.

This case proves—first, that, contrary to the usually received dogma, rigidity of the os uteri is compatible with extreme exhaustion of the patient.

Secondly, that the placenta can be completely separated from the parietes of the uterus by means of the finger when the os is undilatable and rigid. The proofs that the placenta was actually detached are three: 1st. The fact that the considerable oozing going on previously ceased immediately upon the separation of the placenta; 2nd. If the placenta had not been completely detached, internal hemorrhage must have occurred after the rupture of the membranes, for we can hardly imagine that at the eighth month of pregnancy a child's head could be so large as perfectly to compress a placenta seven or eight inches long, and that placenta separated to a very great extent. That there was no internal hemorrhage is proved by the fact of no clot escaping upon the removal of the placenta, or the birth of the child. The third proof is, that after separation, I carefully felt the margin of the placenta all round, so that not the smallest part could be attached.

Thirdly, that galvanism is an ecbolic agent, and also a stimulant to the nervous system generally. That it is an ecbolic agent is shown fairly by the manner in which it stimulated the womb to contraction, and eventually brought on spontaneous pains. It had a decided influence, for each time the galvanic circle was complete the uterus contracted until it became as hard as a board, and when the circle was broken the womb subsided into a state of firm contraction, the active and intense

state of contractibility being again brought on by the re-application of the galvanic current.

Fourthly, this case proves also the correctness of the statement of Dr. Radford, when he declares "that galvanism not only originates the temporary contractions of the uterus, but also produces such a lasting impression on the organ that pains continue to occur until the labour is terminated." That it is a stimulant to the nervous and arterial systems is shown by the brightening of the eye, the delirium of exhaustion ceasing, and the radial pulse becoming perceptible. Hence I think we may infer that galvanism is an important agent in all cases in which powerful contractions of the uterus are required, and that it is useful in hemorrhage both before and after labour, especially when combined with a funis presentation; it succeeds when the ergot fails, and when the uterus refuses to respond to the rupture of the membranes, friction of the abdomen, and the irritation of the vagina and cervix with the finger. I think also, with Mr. Houghton, that it will in many cases obviate the necessity of applying the forceps.

Fifthly, it may be remarked, as regards the apparent inactivity of the treatment, that as my patient was so much exhausted, I ought cautiously and carefully to have dilated the os uteri, and have performed the operation of version. But here, two circumstances forbade that plan of treatment, either of which taken separately is important, but when they occur together, show that the do-nothing plan I adopted was in this case judicious. The first circumstance is the rigidity and undilatability of the os. Now, we know, that in placenta prævia the cervix uteri plays the part of the fundus, and its vessels become enormously increased in size. Supposing that I had forcibly dilated the part, and turned and brought down the feet of the child, is it not probable that the irregular parts of the fœtus, the knees, nates, &c., must have lacerated and contused a part, unprepared and undilatable? It is true that for a time the limb or body of the child may serve as a plug and restrain hemorrhage, but this does not hold good after the birth of a child, when the hemorrhage may and perhaps would have occurred,—and if so, in the exhausted state of my patient, it must necessarily have proved fatal to her. In the second case of placenta prævia I ever attended, I turned and delivered before the os was, as I now consider, sufficiently dilated. In half an hour afterwards I was sent for; blood was flowing profusely, although the womb felt firm and contracted in the abdomen. I had some difficulty in restraining the hemorrhage, and thought my patient would have died. In another case the patient was attacked three or four days after with irritative fever, if not actually phlebitis, produced, I think, by the contusion of the os. Dr. Lee, in his twenty-third case of placenta prævia, says: "The effect produced by the hemorrhage was so great that it was evident death would soon take place if the delivery were not speedily completed, and the state of the orifice was such, that it was certain the hand could not be passed but with the greatest difficulty. I passed the right hand into the vagina, and insinuated my fingers between the uterus and placenta at the back part, and reached the membranes. But the rigidity of the orifice was so great, that, though I employed great force for a considerable time, I could not succeed in getting the hand into the uterus. Dr. Merriman, who was with me, recommended rupturing the membranes, and I was proceeding to do so with the fingers, when I felt one of the feet of the child, which I grasped and brought down into the vagina, enveloped in the membranes, which gave way. Nearly half an hour elapsed before the version could be completed, and when it was effected, the neck of the uterus grasped the neck of the child so firmly that I experienced the greatest difficulty in extracting the head, and not till I had made pressure for some time with the finger, and dilated the orifice of the uterus. A great discharge of blood instantly followed, the placenta was removed, and every means employed to stop the hemorrhage, but the breathing became hurried, the extremities cold, and she died in less than an hour after delivery." Reverting to my own case, the second circumstance was the extreme exhaustion of the woman. To turn when the patient is in a state of extreme exhaustion is now, I believe, generally deemed inadmissible. Dr. Murphy in his lectures says: "In a case of extreme exhaustion do not attempt to turn the child; rather separate the placenta, and leave the child undisturbed until some decided reaction takes place;" and in another place:—"If you were at once to turn the child and deliver, the fate *of the patient* would be sealed." Giffard, Smellie, and the late Dr. Rigby, relate

four cases in which women, when extremely prostrated, have died from the shock of turning.—*Dublin Quarterly Journal, August*, 1853, *p.* 240.

129.—*On a New Method of Inducing Premature Delivery.* By SCANZONI.—The author was induced, by observing the active sympathy between the breasts and the other parts of the sexual apparatus, to try to produce premature delivery by irritating the nerves of the mammary glands. The first experiment was made upon a young woman, aged 24, who, two years ago, had been delivered by perforation, in consequence of contraction of the pelvis. In the thirty-second week of utero gestation, apparatus constructed of caoutchouc, forming sucking pumps, were put upon the nipples. During three days they were used about seven times, the process going on upon each occasion for two hours. After the third application, the neck of the uterus became shortened; after the sixth, severe labour pains came on; after the seventh, the child was born.

The only danger likely to ensue from this very simple method of treatment is inflammation of the mammæ; this can be met with proper treatment.

A second case, of a similar kind, occurred to the author. A young woman, *enceinte* for the first time, suffered so severely from dyspnœa, connected with organic disease of the chest, that premature delivery was necessary for the preservation of her life. After the third application of the sucking-pumps, an apparently dead child was born; respiration, however, was soon re-established. The author remarks, that this case is not quite conclusive, because premature delivery occurs often in connexion with severe dyspnœa, independent of other influences.—*Ges. zu Würtzburg.*

130.—A CASE OF TRIPLETS.

By R. C. SHETTLE, Esq.,

[We may notice in this case, first, the extreme exhaustion of the patient at an early period, without any apparent cause; and secondly, the absence of hemorrhage. Mr. Shettle says:]

At four o'clock in the morning of the 30th July last I was summoned to attend Mrs. C., aged twenty-four, who was in labour with her first child. On reaching the house the nurse informed me that Mrs. C. had been in slight pain during the whole of the preceding day, but that labour pains had not come on until three o'clock, when they sent for me.

Upon making an examination, I found the os uteri about one-third dilated, the vertex presenting, and the membranes (during pain) protruding slightly through the os. The pains, which had not been severe or long continued, now gradually increased in severity, and came on about every ten minutes; indeed all seemed progressing favourably, and I fancied labour would terminate in three or four hours. About six o'clock the membranes (which were quite thin) ruptured: the os uteri becoming fully dilated by eight o'clock, the head pressed down upon the perineum, in which there was an absence of all rigidity. Labour pains after this time began to flag, and my patient exhibited other signs of exhaustion; the pulse becoming quick and irritable; the tongue dry, brown, and coated. Although it was a first labour, there being an absence of all rigidity in the external parts, I administered a dose of the volatile tincture of secale in a little brandy-and-water, in the hope that labour pains might be again brought on, but without effect. By one o'clock the pains had entirely ceased, and she became very irritable, with pulse 120. I therefore considered it proper to have recourse to the forceps, with which I delivered her of a girl at twenty minutes past one P.M. Finding the uterus contained a second child, I once more administered stimulants, in the hope of inducing natural labour pains, especially as the womb had been partially emptied of its contents; but I was again doomed to be disappointed. After waiting an hour, I introduced my hand, ruptured the second bag of membranes, and brought down the feet of the child, which I delivered immediately. Finding yet another, I again introduced my hand; but as the head was the most dependent, I had to turn, which was soon effected, and the

child delivered with but little suffering to the mother. A bandage had been applied round the abdomen before the birth of the first child, and had been tightened when necessary; but during the delivery of the three infants (girls) there had been no pain, and consequently no contraction of the womb. The after-births (three united) were not thrown off by the natural process from the surface of the uterus, and I considered it would be better to remove them at once than to delay doing so, as she would then have to be disturbed again for the purpose of introducing my hand for the third time. I separated the placentæ with the nails, and by grasping the womb externally with the other hand, induced contraction of that organ, and brought them away, without any hemorrhage, by three o'clock. I immediately gave a stimulant, and made the bandage round the abdomen as tight as possible. The uterus contracted firmly, and showed no disposition to re-dilate. I then ordered that she should be kept as quiet as possible, hoping she would get some refreshing sleep, while I retired to an adjoining room, desiring to be summoned should any untoward symptom present itself. After the lapse of an hour I was informed that she was not quite so well, and had not obtained any sleep. I found her very restless, complaining of dimness of sight, and she had lost the use of one side. I administered brandy, ether, and ammonia at intervals, and at six o'clock she appeared more rational and quiet, dozing occasionally until after eight o'clock, when she awoke with jactitation and all the signs of approaching death, and expired six hours after the termination of labour, entirely, to all appearance, from nervous exhaustion. The children are living and at this time doing well.—*Lancet, Oct.* 1, 1853, *p.* 316.

131.—CASE OF TURNING INSTEAD OF CRANIOTOMY, IN A CONTRACTED PELVIS.

By John Traill, Esq., Arbroath.

[The patient, in this case, Mrs. R., was first confined in May, 1836. After two days' tedious labour, during which tartar emetic and blood-letting were employed, violent convulsions came on, and the child was delivered with the forceps. Her recovery was protracted. In 1838, she was again delivered by the forceps; violent convulsion having again supervened. The recovery in this case was so extremely slow, and the health so seriously affected, that Mr. Traill determined, in case of future pregnancy, to recommend the induction of premature labour. He proceeds:]

Some months ago, Mrs. R., in her forty-third year, informed me that she was again pregnant, and that she expected to be confined about the end of May.

Having carefully studied Professor Simpson's papers on 'Turning as a substitute for Craniotomy,' and believing it to be a favourable and proper case for the plan proposed, I decided on allowing labour to go on to the full time.

May 19. This morning I was called to Mrs. R., and was greatly annoyed to find her in a most unfavourable state. The membranes had given way six days previously, and the *liquor amnii* had since been constantly dribbling off; moreover, she had had smart labour-pains for thirty-six hours, and was in a complete state of mental prostration and hopelessness as to the result, both to herself and the infant—so much so, that the child's dead clothes were provided, and she protested against my being sent for, declaring that she had no chance of being delivered for days to come. On examination, I found the head firmly impacted at the brim of the pelvis, but only a small part within reach of the finger elongated, and the scalp swollen; the *os uteri*, about the size of a crown piece, not acted upon by the pains but quite dilatable; the contraction at the brim of the pelvis was greater than I had calculated on—the sacro-pubic diameter did not appear to me to exceed three inches.

Having decided on still attempting to turn, I gave chloroform to the full extent, and then with some difficulty succeeded in pushing up the head and passing the hand into the uterus. I found the *liquor amnii* almost entirely evacuated, and the uterus closely enfolding the infant; the pulsation in the cord was weak; and while searching for a foot, the child had repeated convulsive movements. This induced me to hurry the operation as much as possible, but I found considerable difficulty in bringing the head through the brim, so that fully half an hour elapsed before delivery could be completed. The child, a male rather under the average size, was *quite still for several minutes*, but ultimately recovered.

When the mother awoke from her sleep and heard the cries of her infant, she would not be convinced but that we were deceiving her, both as to her own delivery and as to the possibility of having given birth to a living child. She has made a rapid and excellent recovery without one untoward symptom, and now, in better health than she has enjoyed for eighteen years, is suckling her child, a strong healthy boy.

The gratifying result of this case has very strongly impressed on my mind the soundness of the principles on which Professor Simpson has advocated his proposals as to the practice of turning in contracted pelvis, and has led me to believe that the facility afforded to the advance of the head through the brim of the pelvis in consequence of its changed position, and of the traction which we are enabled to exert through the extruded body of the child, is much greater than could at first view be considered possible.

If I had been aware of the degree of contraction existing, I do not think I would have ventured to have allowed labour to go on to the full period. The head was of average size, or very nearly so;—the sacro-pubic diameter, I am certain, did not exceed three inches (I believe it to have been considerably less); but be that as it may, I found the head firmly wedged, and yet only just entered within the brim, after thirty-six hours of continued smart uterine action, whilst the state of the child's circulation and nervous system, as ascertained by the hand *in utero*, showed that *its* life could not have been much longer protracted.

I cannot therefore doubt, that by the practice pursued, the life of the child was saved; nor do I think that the benefits resulting to the mother can be considered less important.

From the degree of deformity of the pelvis, the firm impaction of the head, and its non-advancement—notwithstanding the prolonged uterine action—I do not believe that delivery by the long forceps would have been possible. I believe that craniotomy must ultimately have been resorted to; followed as in the two previous labours—which occurred under circumstances in every way more favourable—by *at best* a tedious, protracted, and imperfect recovery.—*Monthly Journal of Medical Science, August*, 1853, *p.* 182.

132.—*Puerperal Convulsions in a Primipara delivered of Twins; Advantages of Chloroform in such cases.* By HENRY RUDGE, Esq.—[The advantages of this invaluable agent will be exemplified in the following case:—Mrs. E. M., aged twenty-three, began in labour at eleven o'clock p.m., on the 25th of July. Labour progressed slowly. Previous to the arrival of Mr. Rudge's assistant, Mr. Boyce, she had two or three convulsions. At half-past five a.m., after falling asleep, very violent convulsions occurred. At nine p.m., they recurred with greater violence. Mr. Rudge soon after arrived. He says:]

On examination, I found the os uteri dilated, and the head presenting. The pains were entirely arrested; and the patient was in strong convulsions, attended with considerable hemorrhage. Under these circumstances, I quickly procured some chloroform, twenty drops of which were administered at intervals, by means of a folded cambric handkerchief, by my assistant. The effects were magical. The convulsions, after a few inhalations, entirely ceased; and I proceeded to extract the child, which was effected without difficulty. On examination, I found it was a twin case (both females); and a second head presenting, I ruptured the membranes, and extracted the second child without difficulty, with the forceps; and, in consequence of smart hemorrhage, after a few minutes, I introduced my hand, and carefully extracted the placenta. Leeches and cold applications were applied to the head. After delivery she had, at 3 p.m., one attack of convulsions. She passed a good night; the bowels having been well cleared out. No unpleasant symptom has arisen up to this date.

Mrs. E. M. was not conscious of her delivery; and was much surprised when informed that she had given birth to twins. Both infants are well, and likely to live. I have no hesitation in attributing the favourable issue of this case to the use of chloroform; and I firmly believe that, in skilful hands, it will prove an inestimable boon to the fairest portion of the creation, relieving them from much of the danger and dreadful suffering of tedious and complicated labours—sufferings, the witnessing

of which frequently unnerves the strongest of the other sex.—*Association Medical Journal, Aug.* 12, 1853, *p.* 706.

133.—CASE OF INVERSION OF THE UTERUS AFTER PARTURITION, PROVING FATAL IN EIGHTEEN MONTHS.

By John Gregory Forbes, Esq.

[Mrs. A. B., aged 25, was confined of her first child on the 23rd of April, 1850. Her health had been previously good, but from the consequences of her labour she came to town to consult Dr. Lee, in December of the same year. It was there Mr. Forbes saw the case. He describes it as one presenting all the symptoms of intense anæmia at an advanced stage. Since her confinement she had suffered from a bearing down and profuse hemorrhage, having had five attacks of the latter since July.]

On the 4th of December Dr. Lee made a digital examination, and detected a tumour projecting through the os uteri into the vagina for upwards of two inches. It was of a somewhat pyramidal shape, and its base, measuring in its transverse diameter about an inch and a half, was embraced, though not constricted, by the os, and seemed to be so intimately connected with it at all points of its circumference, that no neck could be traced. Its surface was perfectly smooth, and its consistence rather softer than that of the common uterine polypus. Some trifling hemorrhage followed the examination. Dr. Lee expressed his conviction that the case was one of inverted uterus, and advised strict rest in the recumbent posture till after the next catamenial period, then near at hand, with the employment of cold lotions and ice, if necessary, to restrain the hemorrhage. The result of this examination led to a communication with Dr. Prothero, the lady's medical attendant in the country, who kindly transmitted to me the following particulars of her labour, and the history of the case while under his care:—The labour proceeded well under natural presentation for fourteen hours, when the pains nearly left her. The os uteri being fully dilated and yielding, a dose of ergot was given and repeated in an hour. This had its full effect, and in about two hours the head had descended into the pelvis; but the case now became complicated by a loop of the funis slipping down in advance of it. With the view of saving the life of the child, the forceps, as soon as they could be procured, were applied, but though the delivery was easily effected, it was dead. The placenta was expelled in a few minutes, no traction being necessary, and the uterus contracted well. The funis was of natural length. After the lapse of an hour some hemorrhage took place, and the patient became very faint; but a medical gentleman then in charge of her stated, that before he left her all bleeding had ceased, that the uterus was firmly contracted, and that everything was right. She passed a comfortable night, and for the next three days all went on satisfactorily. The bowels were moved on the third day by medicine; but a few days afterwards Mrs. A. B. stated that the action was attended with much straining and pain, and that she felt as if something had come down with the motion, but that it gave her no great inconvenience. On vaginal examination, it was now discovered that the uterus was inverted, the fundus having descended to within an inch or two of the labia; but no unusual discharge or hemorrhage had taken place since the day of delivery. An attempt was at once made to reduce it with as much force as was considered justifiable, which unfortunately proved ineffectual; and on the following morning a consultation was held, when perfect rest and the use of astringent lotions were recommended. Up to the 8th of May (after which date an examination was not permitted for upwards of three months) no alteration had taken place in the condition of the parts; a suspensory bandage was therefore made with a cushion to support the uterus, and in time the patient was able to take gentle carriage exercise.

A slight sanguineous discharge existed up to the 12th of July, which, th varying more or less in quantity, did not occur to any alarming extent. On thi very profuse hemorrhage took place, and produced much exhaustion, but und and the astringent lotions it soon subsided. In the middle of September M B. removed to the sea-side, and the change was attended with considerable to her general health.

On the 6th December the catamenia appeared, and the discharge conti rately for some days; but on the evening of the 12th, after a day distur

terical feelings, a serous fluid was poured out so profusely as to soak through six or seven napkins used together. On the 13th the discharge was less and of deeper colour, and several clots of blood were expelled. The bowels had been relieved by rhubard and colocynth, but the action exhausted her much. On the 15th she suffered from feverishness and vomiting, though there was no abdominal tenderness, and in the evening had a prolonged fit of hysteria. On the 16th, after taking some blue pill and Epsom salts, a very offensive motion was passed, and during the action of the bowels she completely fainted. On the 17th the case appeared so alarming as to lead to the belief that it would be necessary to apply a ligature around the base of the tumour with the view of dividing it, which, notwithstanding the risk attending such a proceeding, seemed to be the only means of restraining the hemorrhage and of preserving the patient's life.

On the 18th, Dr. Locock saw her in consultation, and after carefully examining the tumour, fully concurred in the diagnosis previously given. The propriety of the immediate application of a ligature was discussed, but the hazardous nature of the operation being considered, and the hemorrhage being now restrained by the aid of a sponge soaked in a strong solution of alum, it was resolved to defer it. In the mean time the plan of treatment agreed upon was to surround the tumour with strips of lint dipped in the solution of alum, to support the system with nourishing diet, and to give one of the mineral acids as a tonic.

On the following day there was some improvement, a tranquil night had been passed, the bowels had been moved by Epsom salts, and there was neither faintness nor hemorrhage. The same treatment was continued till the 26th, when, as there was only a slight mucous discharge, the lint was not as usual replaced. The patient was on the sofa in the drawing room for several hours in the afternoon, and had taken throughout the day more nourishment.

During the frequent examinations which were necessarily restored to, pressure was made upon the tumour with the hope, if possible, of re-inverting the uterus; but it invariably produced such severe cutting pain in the abdomen above the pubes, that a more systematic and longer-continued attempt to effect this was precluded. The tumour itself possessed but little sensibility.

On the 1st of January, 1851, some citrate of iron in small doses was administered, but the stomach rejected it.

From this time up to the 19th, the patient, still strictly confined to the horizontal posture, gained strength. The appetite improved, and the bowels were freed at intervals by Epsom salts. On this day the catamenial period again commenced; and on the 21st the profuse sero-sanguineous discharge recurred, and with it the rapid, feeble pulse, whizzing sensations in the head, and other distressing symptoms. In the evening, during the action of the bowels, several florid clots of blood were expelled from the vagina. A mixture composed of the infusion of cusparia, tincture of catechu, and laudanum was prescribed. On the 23rd, the discharge was still more copious, and in the evening the pulse ran up to 120, with an irritable beat, the patient became hysterical, and vomited some undigested food. The tumour was, therefore, closely enveloped as before with the lint and alum, care being taken, whenever it was removed, to syringe the parts with tepid water, to bring away any clots which, at times, became very offensive. The two succeeding monthly periods, which commenced respectively on the 21st Feb. and the 29th March, were attended with precisely the same symptoms, and the same plan of treatment was adopted. During the intervals the patient rallied surprisingly, and, though suffering much at times from flatulence, intestinal pains, constipation, occasional vomiting, and other symptoms of feeble digestive power, upon the whole she gained strength, and was able to take gentle exercise in an easy carriage or an invalid chair.

On the 16th of April she was well enough to be removed to a distance of upwards of a hundred miles into the country; and though I had no opportunity of seeing her again, I received from time to time very distinct reports of her state. The catamenia returned early in May, and continued longer than usual, for I was informed, in a letter dated the 20th, that at times the discharge was still very copious, with a good deal of colour.

The succeeding period, which commenced early in July, appears to have been attended with a more severe train of symptoms than any she had before experienced. The loss of blood was most profuse for some days, and then subsided, leaving a

very trifling discharge of serous fluid of most offensive odour. This continued for about a week, during which time the stomach rejected everything, and the pain in the head was so intense as almost, it was said, to deprive her of her senses. The state of weakness to which she was now reduced was such that it was thought she would scarcely recover; she did, however, rally, and to my surprise, in a letter dated Oct. 13th, I received much more cheering reports. It was stated that the patient had been improving in all respects, that the last three catamenial periods had been passed over naturally, without any hemorrhage or other untoward symptoms, and that sanguine hopes were now entertained by her relatives that she might ultimately be restored to health. The next report, however, showed that these hopes were not to be realized.

The catamenia again commenced on the 2nd of November, and progressed favourably, and during the following week she suffered much from constipation and headache. The former was relieved by medicine, yet the latter increased, and on the 8th and 9th became very severe. The night of the 9th was passed quietly, but in the morning Mrs. A. B. was found in a state of unconsciousness, with labouring respiration, and an erysipelatous redness on one side of the head and neck. From this comatose state she never recovered, but sank, and expired on the night of the 10th of November.

The post-mortem examination was conducted by Dr. Prothero, but, not having been made until a week after death, the uterus and appendages were the only parts examined.

The uterus was in a state of partial inversion. The Fallopian tubes and round ligaments were drawn inwards and downwards with the fundus, which protruded through the os, forming an oblong, rounded tumour, whose length was three quarters of an inch, its transverse diameter one inch and a half, and its circumference, at the widest part, which was close to the os, about four inches and a quarter. The mucous membrane, which covered it, was smooth, and of a deep purple colour. The anterior lip of the os uteri was thin and narrow, and rested upon the tumour without constricting it; the posterior was flattened and not easily recognised.

Some few fibres of lymph were found between the adjacent surfaces of the peritoneum covering the depressed fundus.

The left ovary was enlarged to the size of a hen's egg, and contained a cyst as large as a walnut, which enclosed a sanguineous fluid. It was found to be quite impossible, with all the force that could be used, the vagina being dragged down at the same time, to re-invert the uterus.

[The above is another melancholy instance of the fearful effects of inversion of the uterus after labour; and the case is a remarkable one, inasmuch as the constitution bore up for so long a period as eighteen months against the great drain which it had to support.]

In a few cases on record, the uterus from some cause underwent spontaneous reinversion, and in others, the patient was relieved of the source of her danger by sloughing of the tumour resulting from inflammatory action or constriction by the os; but these are rare and happy exceptions, and can scarcely be taken into account in estimating the value of the operation.

With regard to the possibility of reducing the inverted organ, it may be admitted on the testimony of the most competent observers, that unless this desirable end can be effected within a few hours after the accident has occurred, there is little or no hope of its being afterwards accomplished. Even with the aid of instruments carefully constructed and perseveringly employed, the attempt failed in a case of two months and a half standing, under the care of Dr. Bouchet, of Lyons. In Mrs. A. B.'s case, the pressure on the tumour gave rise to such pain in the abdomen that it could not be borne. A few instances, however, are recorded in which reduction was effected at later periods, but from their rarity they cannot be considered as affecting the general rule, nor can parallel results be anticipated in other cases.

The duration of life under inversion of the uterus, when it has reached the advanced stage, varies considerably, much necessarily depending upon the original constitution of the patient, and her ability to rally during the intervals of the monthly discharges. During the time of lactation the danger is of course lessened, and if *the* accident occurs at a comparatively late period of life, the tendency to hemorrhage is diminished by the natural cessation of the catamenia. The latter fact is

well illustrated by a case mentioned by Lisfranc, who found this displacement in a woman seventy years of age, to whom, he states, it gave no inconvenience. It was not discovered until after her death, which was caused by pneumonia. She suffered neither from hemorrhage, leucorrhœa, uterine pains, nor difficulty in walking.

Mr. Crosse gives reference to some cases which had been traced to their termination, though many others of which he speaks were lost sight of. It appears that of twelve cases—

1	proved fatal at	8	months.
3	"	9	"
1	"	12	"
2	"	22	"
1	"	2	years.
1	"	3	"
2	"	4	"
1	"	5	"

To these may be added Dr. West's case, in which the patient survived twenty-nine, and that of Mrs. A. B., who lived eighteen months. Dr. King also mentions the case of a lady who lived twenty years under this affection, though suffering from pain and frequent hemorrhages; and Lamotte gives a case in which the inversion had existed for thirty years.

It is worthy of notice that some have been the subjects of this accident in whom it occasioned but little or no distress, of which the following case, related by Boivin and Dugés, affords an interesting example. The patient came under the care of Dubois on the 18th of August, 1825, being the sixth day after her delivery. When first the inversion took place the hemorrhage was excessive and nearly exhausted her. The bleeding, however, had not recurred, and though completely blanched she now complained only of a sensation of weight in the pelvis, slight pains in the iliac regions, and frequent desire to pass water. The use of the catheter was for a short time required, but as the tumour, which reached to the labia on admission, diminished in size, this became unnecessary. Some whitish discharge was secreted from that portion of the uterus to which the placenta had been attached. On the eighteenth day after labour the patient travelled home by the diligence. On the 22nd of September, 1830, upwards of five years from the date of the accident, she again sought advice in consequence of the catamenia not having returned, the only appearance of them being a slight discharge of reddish mucus from the vagina occurring every fifteen or twenty days, and lasting but a few hours. The patient had grown fat, and the tumour was still found to exist.

It is unusual, however, to meet with cases of inversion of the uterus in which so few important symptoms are observed. The touching description of the younger Martin indicates with great accuracy the history of the majority of them. "In the rare cases," says he, "where the woman does not perish from hemorrhage, the inverted uterus lessens in size as it hardens, and becomes extremely painful; the patient falls into a state of marasmus; her powers are gradually exhausted under the uterine discharges, which there are no means of arresting; hysterical spasms disturb the general economy in its functions; the healthy hue of the skin fades, and a slow hectic fever terminates, sooner or later, her deplorable existence." With such a prospect in view, it becomes a matter of great moment in each case to decide whether any operation shall be performed in order to avert, if possible, the impending calamity. There are few, probably, who do not shrink, unless it should be imperatively demanded, from any active surgical interference with an organ of such delicate structure as the uterus, containing within it so large a supply of vascular and nervous tissues; or with a membrane like the peritoneum, so prone under these circumstances to take on fatal inflammatory action. Experience, however, has proved that in these cases a portion or the whole of the uterus may be removed with the result of arresting the hemorrhage, rallying the failing powers, and restoring the patient to health. On the other hand, it must not be lost sight of, that, in some cases, owing to the severity of the symptoms induced by the operation, its completion could not be effected, and in others it has itself been attended with fatal consequences.

The modes which have been adopted for extirpating the bleeding portion of the

uterus are simple excision with a bistoury, excision after the application of a ligature, and gradual strangulation by a ligature only.

The first of these plans was resorted to on one occasion by M. Velpeau, and though the subject of it survived all its dangers and ultimately recovered, the jeopardy in which she was placed was so great, that it will, doubtless, not be often repeated. The patient had suffered from inversion for three years. The tumour was excised, and the finger entered the peritoneal cavity, and felt the intestines. Though but little hemorrhage occurred, the acute pain, cramps, restlessness, and syncope, which followed and continued for three days, very nearly deprived her of her life. The uterus was removed, with the exception of a small portion of its neck.

The same surgeon afterwards performed the operation of extirpation twice by applying a ligature, and then excising the tumour. In both cases it proved fatal. The first was that of Albertine Holbe, of which he gives very full details in his "Clinique Chirurgicale." The ligature was not tied tightly, and some hemorrhage followed the excision. The patient died in three days, and post-mortem examination revealed traces of peritoneal inflammation and extravasation of six or eight ounces of blood into the pelvic cavity. M. Velpeau attributed her death to the excessive loss of blood she had sustained. The other case was that of Josephine Roussin. Two strong threads were passed through the neck of the tumour, for the purpose of restraining any hemorrhage that might occur, but were not tied. The fundus of the uterus and part of its body were then removed, and the vagina was plugged. The patient died two days afterwards from peritonitis.

The simple application of a ligature around the neck of the tumour in order to destroy its vitality, appears to possess more advantages than the other modes of operating. The constriction may, in the first instance, be moderate, so as to excite sufficient inflammation to unite the adjacent surfaces of the peritoneum lining the inverted organ, without inducing severe pain and nervous symptoms; and if these should arise, the ligature may be loosened, which usually has the effect of arresting them. Whether the constriction can be more gradually applied and more steadily maintained by a flexible wire than by an ordinarily silk or thread ligature, is a matter to be decided by practical observation. In four out of his five successful cases, Dr. Johnson used a ligature made of fine well-annealed silver wire and silk twisted together.—*Medico-Chirurgical Transactions*, 1852, *p.* 135.

134.—GALACTAGOGUE AND EMMENAGOGUE EFFECTS OF WARM AND STIMULATING APPLICATIONS TO THE MAMMÆ.

By Dr. John Rose Cormack.

[In preceding volumes we have inserted papers by Dr. M'William on the value of fomentations, with the leaves of the Ricinus communis and Jatropha curcas, as used in the Cape de Verd Islands, for producing a secretion of milk. Dr. Tyler Smith by a similar method produced a similar effect, even in the colder climate of London. Dr. Cormack believes that the warm fomentations were the chief cause of the excitement produced in the mammary gland, and that stimulating embrocations and cataplasms possess this power in a still higher degree. He says:]

My object at present is to establish, by the brief narration of a few facts, the following propositions:—

1st. Warmth and stimulants applied to the mammæ often act powerfully as *galactagogues.*

2nd. Warmth and stimulants applied to the mammæ often act powerfully as *emmenagogues.*

3rd. The leaves of the bofareira (or the ricinus communis) and jatropha curcas act as galactagogues and emmenagogues; but not from their possessing any peculiar or specific power.

I. *Warmth and stimulants applied to the mammæ often act powerfully as galactagogues.—Case* 1. *Milk restored to the mammæ by hot fomentations.*—Last month, a lady, when nursing her infant, about seven months old, was attacked with acute *bronchitis* of moderate severity, which was successfully treated by low diet, and tar-

tar emetic in small doses. At the end of four days, the bronchitis was cured; but the milk, which had previously been failing, almost entirely left the breasts. On the fifth day, from exposure to cold, she experienced a relapse of the bronchial affection. As she had been considerably weakened by the previous attack, and as the symptoms of the relapse were not sufficiently severe to justify recourse a second time to antimony, I ordered her to take a draught containing ammonia and chloroform, as an anodyne, expectorant, and diaphoretic, every eight hours; and to carry out similar intentions, I also directed a succession of pillow-cases, filled with heated moist bran, to be applied to the chest. When I saw her on the following day, after this treatment had been employed, she told me that she had profusely perspired for some hours; she was (after copious expectoration) free from cough and pain in the chest; and, what was equally a source of pleasure and surprise to her, *her breasts had become distended with milk.* This lady was able to resume nursing, and to continue it with the assistance of a suitable diet.

Case 2. *Hot Poultices keeping up the Secretion of Milk when this was not desired.*—A lady suffered, after her confinement, from a succession of abscesses and abortive abscesses in the breast. The surgeon who attended her treated her by antiphlogistic medicines, under which discipline she passed some wretched months, from mental and bodily depression, aggravated by hysterical attacks. The local affection did not seem to make any satisfactory progress; and the great obstacle to a cure was stated to be the impossibility of getting rid of the milk, in spite of saline purges being freely administered. The mammæ, during the whole of the period to which I refer, had been ceaselessly treated, night and day, with hot poultices and medicated fomentations. These applications were abandoned, and a general diet prescribed. *In a few days there was not a drop of milk in the breasts;* and the abscesses, actual and threatening, had ceased to give any pain, and had, in fact, almost disappeared.

II. *Warmth and Stimulants applied to the Mammæ, often act powerfully as Emmenagogues.*—Warm clothing of the abdomen and limbs, hot hip-baths, and medicines which stimulate the bladder and rectum (such as ergot, cantharides, and aloes), have undoubted emmenagogue powers in properly selected cases of retarded or suppressed catamenia; and indeed, they constitute, in various combinations, the principal measures by which the physician usually endeavours to excite the ovarian nisus upon which menstruation depends. The observant physician knows well, that while his treatment is directed to the uterus through the ovaries, the effects produced upon the mammæ are generally very striking, and the first indications which he expects to find of the uterus being roused from its torpor are turgescence and tingling of the mammæ; phenomena which also usually precede normal menstruation. It is equally true, though not so familiarly understood, that measures which act directly and primarily upon the breasts, such as warm clothing to the bust, and the application of stimulants, not only cause them to swell and throb, but likewise stimulate the ovaries, and cause the menses to flow. The practice adopted by some practitioners, of applying leeches to the mammæ in amenorrhœa, owes its efficacy to fomentations used, and the irritation of the bites.

[Dr. Charles Patterson, in 1834, published a paper on the emmenagogue power of irritation of the mammæ by sinapisms. When at the Edinburgh dispensary, Dr. Cormack tried this plan with great success. The following is an abstract from Dr. Patterson's paper:]

"Mary Reardon, aged 24, of moderately corpulent habit, was admitted into the Rathkeale Hospital on the 10th of August, 1832. She laboured under slight synochial fever, which in a few days yielded to venesection and purgatives. On the 19th August, symptoms which were considered of a hysterical character presented themselves, with pain in the upper and outer part of the right side of the chest. For the latter affection, a small sinapism was prescribed; but from inattention of the nurse, it was made so large, that it covered a considerable portion of the mammæ. The sinapism remained on for half an hour. At the visit on the following morning, the 20th of August, Reardon complained that the right breast was exceedingly painful—the pain being very different in its character from that which she had before experienced. On examination, the whole of the chest was found considerably swollen; there was slight diffused redness of the skin; and though the mamma itself was enlarged to four or five times its natural bulk, yet there was no circumscribed hardness, nor any tendency to suppurative inflammation. On the 21st August, the right mamma and

adjoining parts of the chest were found much more enlarged than they had been at the preceding visit. The left mamma and side of the thorax were unaffected; and it was announced by the nurse that the catamenia had that morning appeared, and were then in considerable quantity. This discharge, which, as the patient stated, had been for two years and a half wholly suppressed, continued to flow for two days; then it began to decline, and with it the tumefaction of the mamma gradually disappeared."

Dr. Patterson's attention having thus accidentally been directed to mammary irritation as an excitant of the torpid uterus, he resolved to try its efficacy when a suitable opportunity presented itself. His next case is thus described:—

"Catharine Power, aged 19, applied to me on the 14th September, 1832. She complained of headache, languor, loss of appetite, and inability to attend to her usual business, that of a servant. She stated, that about the middle of April, the menstrual discharge being then present, she incautiously exposed herself to cold in washing clothes at a river. The catamenia then suddenly ceased, and had not since returned; and from that period she had been constantly subject to ill health She had consulted different medical gentlemen, and taken a great variety of medicine, with little advantage. I directed that the clavicular half of the right mamma should be covered with a sinapism. It was allowed to remain on for thirty minutes; and on visiting her in six or seven hours after its removal, I found the whole right breast considerably swollen, hot, and painful. The next morning, the enlargement of the mamma was very much increased, the tumefaction having extended to the clavicle and axilla of the irritated side. There was no hard circumscribed or prominent tumour, but a painful, diffuse, elastic distension of the mammary gland, and surrounding cellular substance. On the evening of the day next succeeding the application of the sinapism, this poor girl with much joy reported that the catamenia had appeared. The flux having continued for two or three days in moderate quantity, she then found herself greatly relieved of the headache and other most distressing symptoms; and in a week her health was so far restored, that she ceased to require any further attendance."

[Dr Cormack concludes, therefore, that the galactagogue effect is not produced by any specific property of the leaves before mentioned, but merely by the determination of blood to the gland produced by the warmth and irritating properties of the juices they contain. But, he observes,]

Injurious effects may so readily be produced by *excessive irritation of the mammæ* upon themselves, upon the ovaries and uterus, and (as a consequence of the undue excitement of any of these organs) upon the whole system, that, in following the practice recommended in this paper, it is necessary to proceed with caution.

First, as regards the *mammæ* themselves, care must be taken not to produce too much irritation, lest troublesome inflammation be excited in them, and in the glands of the axilla;—consequences which I have seen produced in such a degree as to require, for several days, cooling lotions and general antiphlogistic measures.

In irritable subjects, or when the effects of the treatment cannot be daily ascertained, stimulating embrocations ought to be preferred to sinapisms. When sinapisms are applied every eight or twelve hours, for some days continuously—as is sometimes necessary—they ought to be compounded of two or three parts of bread to one of mustard; and a fold of soft linen ought to intervene between them and the skin. By attending to these conditions, patients will generally endure the poultice without injury for half an hour or an hour; and a greater amount of benefit will be obtained than by causing violent stimulation for a short period. It is always essential to maintain, during the intervals, great local warmth, by means of abundance of cotton wadding. If mammary irritation have been carried so far, through mistake or accident, as to necessitate recourse to refrigerating lotions and lowering treatment, it need hardly be remarked, that the object for which it was used is not likely to be accomplished.

Secondly, as regards the *ovaries* and *uterus*, the effects produced upon these organs must be attentively watched; for the very greatness of the power which irritation of the mammæ exerts over these organs, may constitute an element of danger. In endeavouring to excite menstruation, we must take care that we do not *excite inflammation* of the ovaries, or of the womb. When we find the patient *complaining of severe pain* in the loins, and suffering from general fever, we ought

at once to discontinue mammary irritation, and prescribe rest in bed, abdominal fomentations, and the frequent use of the hip-bath. In cases of this description, as in ordinary attacks of dysmenorrhœa, we may often not only relieve pain, but accelerate a resolution of the inflammation, by administering opiate enemata.—*Association Med. Journal, March* 25, 1853, *p.* 254.

135.—*Dry-Cupping a Substitute for Ergot.*—The 'Charleston Medical Journal and Review' for January, 1853, quotes a paper on this subject from the 'Nashville Journal of Med. and Surg.,' of which we give an abstract.

Dr. Washington has recently discovered that dry-cupping, applied to the lowest part of the sacrum, produces dilatation of the os uteri; and, applied higher up, contraction of the uterus.

In a case, where the pains had endured fourteen hours without producing any perceptible effect, in consequence of rigidity of the os uteri, Dr. Washington applied a dry-cup as low down on the sacrum as possible, so as to cover the origin of the nerves to the os uteri. Complete relaxation ensued; at the next pain, the head descended to the outlet; and at the second pain the patient was safely delivered; and that in less than ten minutes from the application of the cups. In tedious labour, the cup should be applied first to the lowest point of the sacrum, and if, in the course of ten or fifteen minutes, the patient is not delivered, another should be applied higher up, so as to cause the uterus to contract. *The lower one should always be on when the upper one is applied, so as to ensure relaxation* of the os uteri when the pains come on.

In retained placenta, the cups are to be applied higher up, so as to cause the uterus to contract at once, the relaxation of the os uteri being always sufficient after the fœtus has passed.

When ergot is administered, the woman is delivered by main force, without any relaxation except that produced by the most fearful pains. By dry-cupping, two or three pains are sufficient, and the amount of suffering is not more than ordinary.—*Association Med. Journal, May* 27, 1853, *p.* 469.

136.—EMPLOYMENT OF THE GALVANIC CAUTERY IN CASES OF VESICO-VAGINAL FISTULA, PROLAPSUS UTERI, AND VASCULAR GROWTH IN THE URETHRA.

Under the care of Mr. Marshall, University College Hospital.

[The great value of this cautery is, that as the parts are divided the caustic action is sufficiently powerful, at the same time, to check any hemorrhage which may arise.]

It may, perhaps, be as well to premise that this instrument consists solely of a platinum wire, heated to a red or white heat by means of a galvanic battery, and that its superiority over all others intended for the same purpose consists in the circumstance, that its temperature is sustained, or, if by accident reduced, is immediately replenished, by the galvanic current, without any need to suspend the operation in order to re-heat the wire. All who have had experience in the use of the ordinary cauteries in delicate operations, will be aware of the difficulty of getting through the necessary steps, especially if the surface to be touched be large, before the iron has become too cool for use. The moisture of the part very rapidly extracts the heat from a wire which has been removed from the lamp, and the surgeon is consequently under the necessity of continually interrupting his operation to change instruments, or to renew the temperature of his original one. From this objection the wire heated by galvanism is entirely free, as it sustains or constantly renews its heat as long as it continues in contact with the battery. The wires communicating with the trough are made long and flexible, so as to permit of the terminal rods being easily moved about; and as the culminating point may either be a slender piece of wire or a coil, so wound as to present a surface of any wished-for breadth, the whole constitutes a very manageable piece of apparatus. We need hardly

state that this kind of heat does not differ in its properties, so far as is known, from that obtained by other means.

The first of the cases we have to mention was one of vesico-vaginal fistula, which had occurred as the result of laceration and sloughing from pressure during childbirth, in a woman aged 34. She had suffered from the disease for three months before her application at the hospital, and had been rendered miserable by the almost constant incontinence of urine which it induced. In October last, we witnessed the first application of the cautery to the edges of the fistula. The patient having been placed on her back on the operating-table, Mr. Marshall introduced into the vagina a speculum, having an aperture in its upper surface through which the posterior surface of the bladder bulged. The opening, which was so large as to admit three fingers easily, and had indurated borders, was thus brought well into view. Mr. Marshall applied the cautery, a coil of wire, heated to white heat, pretty freely to the whole of the exposed edge. The woman was removed to bed, and did not afterwards suffer any pain worth mentioning, or any kind of constitutional disturbance. The operation was repeated in exactly the same manner in November, at which time the aperture had diminished very considerably. It has since been done seven times, at intervals of from three to eight weeks. The diminution in size of the fistula has been progressive, and, at the present date, June 25, the patient is fulfilling all the duties of a regular nurse in the hospital, and is subject to very little of her former inconveniences. As generally occurs in these cases, great difficulty is found in getting the hole to close up entirely, and there still exists a small slit, through which the point of a common-sized penknife might be passed. Mr. Marshall informs us, that, in a case under his care in private practice, in which the same procedure has been had recourse to, he has attained a like degree of success, without, however, being able, as yet, to induce a perfect cicatrization.

On Wednesday, June 1, Mr. Marshall applied the galvanic cautery to three patients in succession. The first brought into the theatre was a young woman, from whom there had been removed, last Christmas, by another surgeon, a small vascular growth, situate just within the meatus of the urethra. It had been re-produced; and, as she described the bleeding which followed the former operation as having been alarmingly profuse (at least a quart), it was thought better to destroy it by means of the cautery, than to attempt another excision. Chloroform having been administered, the patient was laid on her back, and the parts exposed. The urethra was then dilated, and its lips held as widely separated as possible, by means of small blunt hooks. The growth, which sprang from the floor of the urethra, was thus brought well into view, and the heated wire freely applied to its whole surface, in some parts breaking up its structure. On account of its extending far back towards the bladder, Mr. Marshall encountered some difficulty in securing the application of the cautery to the most remote parts; but by further dilatation of the urethra, this was ultimately accomplished. The woman was an out-patient; and as soon as she had well recovered from the effects of the chloroform, left the hospital, and walked home. Mr. Marshall informs us, that she suffered but very little pain afterwards, and that the cicatrization was completed on the tenth day. The floor of the urethra now presents a small pale scar, about the size of a mustard seed. Mr. Marshall does not apprehend any inconvenient contraction of the parts after this operation, as he has had an opportunity of watching the behaviour of the cicatrix in four other cases, for long periods after its performance, and never witnessed any such result.

The next case was one of severe and long-continued prolapsus uteri, for the relief of which, as the vagina was very large, and its walls lax and distensible, it was proposed to make a series of eschars in the course of that passage, so as to diminish its calibre by the subsequent contraction of the cicatrices. Mr. Marshall pointed out to those present the principles involved in this method of treatment, and called attention to the superiority of the operation by means of the cautery over that by the knife, in avoiding all risk of hemorrhage, and in being very slightly painful, &c. He then exhibited a speculum of peculiar construction (a French instrument made by M. Leur), which he had procured for the purpose, as possessing great advantages over those in common use. It consisted of two very large blades, each of which was composed of a light framework of metallic bars, and enclosed double rows of *fenestræ*, about an inch in length, and half an inch in breadth. The instrument was

adapted only for a very full-sized vagina, and, when introduced and its blades set apart, it had the effect of widely separating the walls of the canal, and at the same time of allowing the mucous membrane to bulge inwards through the rows of apertures. This, of course, was exactly what was required for the easy application of the cautery. The patient, Emma Smith, aged 34, was a married woman, who had borne three children. Ever since her first confinement, March 1, 1850, she had suffered more or less from prolapse of the womb, and the inconvenience had been increased after each succeeding confinement, until it had latterly almost incapacitated her for going about her household duties. Chloroform having been administered, the patient placed in position, and the speculum introduced, Mr. Marshall proceeded to apply the cautery, which, on this occasion, as an extended surface was needed, consisted of a coil of wire, wound round a small bit of common tobacco pipe, to the surface of the mucous membrane, as exposed through the set of openings in the framework of the speculum. In this manner eight eschars, all of considerable size, were made on each side of the vagina; the operation being performed very quickly, and without any kind of difficulty, as it was scarcely necessary to withdraw the instrument once before its completion. As soon as the patient had a little recovered from the effects of the chloroform, she was carried to her bed, and another woman, suffering from the same disease, in a yet more aggravated form, was next placed upon the operating table. Sarah Humphrey, aged 58, the mother of five children, had been troubled with prolapsus uteri for seventeen or eighteen years. It had latterly been constantly down when in the erect posture, but passed into place without much difficulty when recumbent. The exposed mucous lining of the vagina had become greatly thickened, brawny, and in some parts hard and dry, like cuticle; in others, where it had sustained friction against the thighs, it was ulcerated. These conditions were apparent to all present when the patient was placed in position for the operation, for the protrusion was then down to the size of an infant's head. Mr. Marshall remarked, that it might, at first sight, seem advisable to take advantage of this position of the part, in order to apply the cautery; but, from his experience of a former case, in which that had been done, he was not inclined to again attempt it. The application itself was, of course, easy enough; but it was impossible to return and re-invert the protruded mass, without inflicting undue violence on the parts which had just been cauterized; the patient, in the instance alluded to, had suffered afterwards from a slight attack of peritonitis, which he (Mr. Marshall) was inclined to attribute rather to the violence thus done, than to the operation itself. The prolapsus having accordingly been reduced, exactly the same steps were gone through as in the case we have just described, with the exception, that, as the mucous and submucous tissues were much thickened, it was necessary to apply the cautery more freely, so as to allow it to act deeply.

We must not omit to mention here another advantage belonging to this operation,—viz., that, through all its steps, the surgeon is enabled to see distinctly what he is about. We observed, that, when the cautery was within the vagina, the brilliant incandescence of the wire sufficed to light up all the surrounding parts, in the clearest possible manner.

The after-treatment and progress of these two patients have been almost precisely similar, and destitute of any excepting negative features of interest. During the first fortnight, they were, of course, confined to bed, and, for the first few days, the bowels were allowed to continue costive; after which, a few doses of castor oil were given at different times, and constituted the sole medication pursued. Detergent injections were at first used twice daily, and, as the sloughs separated, were replaced by mildly stimulating ones. The ulcers have now healed, and there is in each case a very decided diminution in the capacity of the vagina. Both women have been allowed, during the last ten days, to sit up and move about the ward a little, and in neither has any prolapse yet resulted. It is intended, however, to repeat the operation very shortly on both of the patients.—*Med. Times and Gaz., July* 2, 1853, *p.* 12.

137.—TREATMENT OF DISPLACEMENTS OF THE NON-GRAVID UTERUS.

By Dr. J. F. Peebles, of Petersburg, Virginia.

[The great objection to all contrivances yet introduced to support or rectify the position of the womb is, that, as they must be worn some time, they may produce injury to some of the organs with which they are in contact. The instrument, and the only one which Dr. Peebles considers is free from this great disadvantage, is the one recommended by Professor Hodge, of Pennsylvania.]

Dr. Hodge's Pessary.

The instrument consists of two lateral bars, curved to correspond with the walls of the vagina, united at top by a rectangular bar (see fig.).

The instrument lying in the vagina maintains it in its original shape, and it is by doing that alone that it proves effectual in keeping the uterus *in situ*. It operates through the vagina, and rather presses away from than against the womb. It is, moreover, not liable to derangement, and readily permits the natural functions of all the pelvic organs to be performed without obstruction. It is worn without annoyance, and can be introduced and removed with great facility. From the principle of its action, it must appear that it is calculated to replace the womb, when displaced in any way. The principle is the only true one, in my opinion, and I am in the habit of using this form of instrument in every case of displacement where mechanical support is required. In retroversion, particularly, it is an invaluable agent; with no other have I succeeded so well in the removal of the distressing symptoms attending on that form of uterine displacement.

Its mechanism in the removal of retroversion must be obvious. It will be seen that the mere introduction of the pessary alters the position of the uterus completely. The posterior wall of the vagina is kept so distended by the back part of the pessary, that instead of yielding, as before, it becomes the seat of a force which bears the fundus uteri upwards and forwards, throwing its cervix downwards in the vagina, and keeping it there. Its mere introduction, in fact, alters the position of the uterus from retroversion to that of simple prolapsus in the first degree; and it is by the distension of the posterior roof of the vagina to its normal dimensions that the organ is kept *in situ*, and not by any force exerted against it. This constitutes the great merit of the apparatus; it completely rectifies the displacement without the danger of local injury. When well adapted to the dimensions of the pelvis and vagina, it can be worn without annoyance for months or years; and such is the signal relief which patients experience from it, that I have known them to object to its removal, long after all tendency to displacement had ceased to exist.

The caution to be observed in retroversion is to secure the full extension backwards of the posterior vaginal wall, so that the long diameter of the womb should be brought to look in the direction of the umbilicus. Without this, the weight of the womb, by the swaying backwards of the organ, might rest on the hindmost bar of the pessary; in which event, its pressure then would so bear up the two lateral bars, that their anterior ends would excite irritation at their terminations under the pubic arch. This is the only inconvenience in wearing the pessary, and it is to be avoided by having the fundus uteri thrown well forward, so that its weight will sway anteriorly instead of posteriorly. This objection makes it necessary in some cases to adopt measures to lessen the volume of the posterior uterine wall before applying the instrument. The reposition of the organ by the uterine sound, and a few days' rest in bed in an appropriate position, is often all that is required for this purpose. I have given complete relief in retroversion immediately by this instrument; in cases, too, in which all other measures had failed; and after a trial of most of the mechanical agents in use, including Dr. Simpson's stemmed supporter, I give it the preference, and rely upon it in my practice.

The globe pessary, highly recommended by some, in my experience aggravates the distress in retroversion; and the ring, and indeed all other forms of instruments in use, besides being less manageable, are ineffectual. I have used Dr. Simpson's instrument in one case; it could not be borne, and from its effects, I am not inclined to make a repetition of its use in this displacement, although it appears so admirably

adapted to its treatment. The great advantage in the mechanical treatment of retroversion, is to have an apparatus answering the purpose that can be easily worn, and that for a long time, without endangering local irritation, and this is the merit of Dr. Hodge's pessary.

The principle governing the mechanical treatment of anteversion is the same with that of retroversion. The same apparatus may be used for maintaining the integrity of the vagina, as it regards its length and firmness, with the addition of a front bar, uniting the anterior ends of the lateral bars, in a similar manner with the posterior ends. Such a pessary appears as a parallelogram, having its lateral bars curved in accordance with the proper shape of the vagina. The use of the front bar is to support the anterior vaginal wall, making it pull against the cervix, so as to draw the fundus upwards and forwards.

Where mechanical treatment is necessary in flexions of the uterus, I recommend the same apparatus; because the indications, at least those which can be fulfilled by such means, are the same in these deviations. By steadying the organ, local congestion, upon which most of the distress in flexion depends, is removed, its recurrence prevented, and time is given for the bend in the womb to be rectified. In the case of anteflexion, alluded to in another part of this paper, I had the most signal success with the barred pessary. The patient, from being more or less bedridden, has become a strong woman, walking without annoyance, and never suffering from her womb complaints. The dysmenorrhœa has gradually been relieved, and the thinned parietes of the cervical walls, created by the flexion, have considerably filled up. She continues to wear the instrument by preference, and in time I believe the flexion will be permanently rectified. In retroflexion, from the principle upon which the instrument operates, there is a greater reason to expect decided benefit than in anteflexion, and such has been my experience.

In prolapsus of the second and third degrees, the apparatus constitutes an effectual and convenient method, as much so as any that can be devised, for keeping the organ *in situ*. In bad cases its effects are much enhanced by proper perineal support. At the same time that it keeps the womb at its proper elevation, it allows of the free application of such measures as may be required to impart strength to the relaxed vaginal walls.

Professor Hodge has his instruments made of silver, which are afterwards gilded by heat, and it is certainly the best material on account of its lightness and durability; yet the gutta percha furnishes an excellent substitute. I have modelled pessaries from this substance which have been used on an emergency; in cases requiring great nicety of form and arrangement, I have found it best to manufacture them of this material first, and afterwards use the model in forming the metallic one.—*Am. Journal of Med. Science, July*, 1853, *p.* 51.

138.—NEW OPERATION FOR THE CURE OF PROLAPSUS UTERI.

By M. Desgranges, Senior Surgeon of the Hôtel-Dieu at Lyons.

[M. Desgranges believes his operation to possess the following advantages: it neither compromises life or even the functions of the organ; nor, should it fail, does it render the disorder more severe than before. He first reviews the various operations which have been proposed to remedy this disease.]

Narrowing of the Vagina.—Cauterization.—In 1823, M. R. Gérardin proposed to form contractile cicatrices, and thus to narrow the vagina, and increase the resistance of its walls. He went still further, and advised the complete obliteration of the canal. In 1833, Professor Laugier employed cauterization with acid nitrate of mercury. In 1835, M. Velpeau applied the actual cautery. The objections to cauterization are—the difficulty, especially with the actual cautery, of limiting the extent of the part acted on, and the danger of injuring neighbouring organs, which renders it necessary to cauterize superficially, and hence often insufficiently. Success, however, may be expected from cauterization in a few cases, but it requires to be carried further than prudence allows.

Excision.—Drs. Heming and Marshall Hall propose the removal of an elliptical piece from the anterior wall of the vagina; the edges being immediately united by

suture. Mr. Ireland recommends the removal of a quadrilateral flap on each side. M. Velpeau prefers removing pieces both before and behind, so as to treat the rectocele and cystocele, which he observes to habitually accompany prolapsus uteri. In the few cases in which excision has been practised, the prolapsus has returned in a few months. The tediousness and difficulty of this operation, its liability to injure the bladder or rectum, and the chance of purulent infection, are objections to its performance.

Suture.—M. Bellini, an Italian surgeon, proposes to include a fold of the vagina in a suture, so as to produce sloughing. But the fold may be too deep; hemorrhage may be produced; or the long presence of the sloughs may irritate the organs, and expose the patient to the risk of purulent infection.

Narrowing of the Vulva.—Dieffenbach excised a series of longitudinal folds round the orifice of the vagina. But this only converts complete into partial prolapsus; and this would be a great point gained, if the patients were freed from the pain produced by the displaced uterus at the same time as from the projecting tumour. The merit of the operation is, however, doubtful. M. Malgaigne believed that the excision of the anterior or the posterior semicircumference of the vagina would be of more advantage than other methods; but the only case on which he operated in this way was unsuccessful.

Fricke of Hamburg proposed to unite the walls of the vulva. He pared the internal faces of the labia majora, and united them by suture, as in perineoraphy. Care must be taken to leave an aperture behind for the passage of fluids, and one in front for the performance of the generative functions. The uterus is thus sustained by an artificial floor; but this is too low, and the radical cure is only the substitution of one grave infirmity for another.

All these modes of operation M. Desgranges believes incapable of fulfilling the object intended, while several of them are likely to produce danger. The opinion of M. Moreau, that pregnancy is a remedy for prolapsus, he answers by the statement that he has always seen it augmented after labour in persons in whom it previously existed.

The instruments used by M. Desgranges are small self-closing curved forceps, furnished at the end with projecting teeth; a holder resembling a pair of lithotomy forceps, but having the end of the branch channelled, for the purpose of applying the small curved forceps; a trivalve speculum; a lithotomy gorget; a pessary to distend the vagina; and a double T bandage.

Operation.—The patient, having been prepared by rest, bathing, gentle purgatives, and an enema, is placed upon her back, with her thighs widely separated. The trivalve speculum is then introduced, with the handle turned towards the pubis, and the valves are separated to a circumference of about six inches. The vagina usually projects between the blades; but sometimes, when the tissue is less lax, it remains stretched. The cervix uteri must be carefully looked for, as it may lie between the valves of the speculum, like the portions of the vaginal wall.

Through the speculum, the vaginal forceps, with strings passed through their handles, are introduced by means of the holder; and, by strongly pressing on the handles of the latter, the blades of the forceps are separated. They are then placed on the projecting membrane of the vagina, and, by relaxing the hold of the handles, they are made to take firm hold of the tissues. Each projection between the blades of the speculum, or, as is sometimes found, each flat portion between them, may receive two or three of these forceps, so that from six to nine altogether are applied. The speculum being withdrawn, the pessary is introduced, and is firmly fixed by means of some turns of a double T bandage, of which the vertical bands meet the transverse one at the level of the hypogastrium; each of the vertical bands turns over the upper part of the thigh, to rest on the great trochanter. The string which attaches the pessary to the bandages ought to be rather behind than in front, as the passage of urine may otherwise be impeded or prevented by the pressure of the urethra against the pubis. The strings attached to the forceps are collected, tied together, and fastened to the bandage. The patient is then put to bed, and perfect rest is enjoined. The forceps generally fall off from the fifth to the tenth day, sooner or later, according to the size of the fold of the membrane which they have seized.

This operation is repeated on other parts of the vagina, the speculum being employed until the walls no longer project between its valves, or its being opened

causes pain or hemorrhage. The gorget or finger must then serve as a conductor. The gorget is passed in on the finger to the part intended to be operated on, and is turned with its convexity towards the vaginal wall. The vaginal forceps, fixed in the holder, are then introduced along the groove in the gorget. When they have arrived at the end, the conductor is withdrawn, and the forceps are made to seize the membrane. When the finger is used, the forceps are introduced along it, taking care that the finger be not wounded. On arriving at the destined spot, the blades are separated, and pressed against the vaginal wall.

The instrument is most easily applied on the posterior wall of the vagina; with more difficulty on the lateral wall; but, in regard of importance, the lateral walls have the preference. M. Desgranges has never made more than *ten* applications of the instrument. He says that the surgeon must be guided by circumstances in judging of the proper number of applications, but that it is better to make too many than not enough.

The pain, he says, is not great, unless the cervix uteri be seized: pain then is severe, radiating to the loins and abdomen. The free extremities of the forceps may cause excoriations, unless the tissues be protected by diachylon plaster.

Results of the Operation.—The febrile reaction is slight, and of short duration; and requires no treatment beyond low diet.

When the forceps have fallen off, a small suppurating wound is left. By digital examination, small hemispherical projections are felt, varying from the size of a pea to that of half a nut.

The vagina gradually loses its calibre and its mobility. At a later period, it becomes covered with nodular bands; the narrowing goes on until the finger can scarcely be introduced without a disagreeable sensation. In process of time, the nodosities become smaller, and even disappear; the vagina regains its suppleness, and, with the exception of its calibre, it returns far towards the normal state. The cervix is in the axis of the vagina; and the contraction affords no impediment to *coitus* or to delivery, as has been proved in one case.—*Association Med. Journal, May* 13, 1853, *p.* 415.

139.—*On Vaginal Cystocele, or Prolapsus of the Anterior Wall of the Vagina and Bladder, and a new Operation for its Cure.*—[At a meeting of the Medical Society of London, Mr. Brown related a case illustrating the above affection. The patient was 52 years old, and had ten children. The case was so aggravated that with the least exertion the anterior wall of the vagina became so prolapsed that a tumour was produced by it of the size of a man's fist, producing several ulcerated patches from the friction of the parts. All means of relief which had been suggested having done no good, it was determined to try to effect this by means of operation.]

The patient having been prepared for the operation, by emptying the bowels, was, on February 15th, placed under the influence of chloroform, and then put in position for lithotomy, each leg being held by an assistant, and well bent back on the abdomen, a third assistant holding up the tumour with Jobert's bent speculum, and pressing it under the pubes in its natural position. A piece of mucous membrane, about one inch and a quarter long, and three quarters of an inch broad, was dissected off longitudinally, just within the lips of the vagina. The upper edge of the denuded part being on a level with the meatus urinarius, the edges were drawn together by three interrupted sutures, this being repeated on the other side of the vagina. The next stage of the operation consisted in dissecting off the mucous membrane laterally and posteriorly in the shape of a horse-shoe, the upper edge of the shoe commencing half an inch below the lateral points of denudation, taking care to remove all the mucous membrane up to the edge of the vagina, where the skin joins it. Two deep sutures of twine were then introduced about an inch from the margin of the left side of the vagina, and brought out at the inner edge of the denuded surfaces of one side, and introduced at the inner edge of the other denuded side, and brought out an inch from the margin of the right side of the vagina, thus bringing the two denuded surfaces together and keeping them so, by means of quills, as in the operation for ruptured perineum. The edges of this new perineum were then brought together by interrupted sutures, and the patient placed in bed on a water-cushion.

Two grains of opium given directly, and one grain every six hours; simple water-dressing applied to the parts; beef-tea and wine for diet. A bent metallic catheter was introduced in the bladder, to which was attached an elastic bag to catch the urine; by this means the bladder was constantly kept empty. This patient progressed satisfactorily from day to day without a single unfavourable symptom, and on the 22nd the deep sutures were removed, and the parts found firmly united; the lateral interrupted sutures were gradually removed, and firm union was found to have resulted. On the 26th examined very carefully the vagina, and found the deep union perfectly sound, about three quarters of an inch thick, the lateral wounds well contracted; the tumour could not be brought down by coughing. March 8: The parts are all firmly healed; the patient much improved in health, with a very cheerful aspect of countenance; she can walk about without inconvenience, and no amount of exertion produces any prolapsus; she can empty her bladder with comfort, and all the leucorrhœal discharge, which was so distressing before the operation, has entirely subsided; the offensive smell from the decomposition of the urine has also disappeared. On passing the finger into the vagina, the os uteri can be felt easily in its normal position, and the ulcerated spots which formerly existed on its surface are healed. On the 10th she was discharged cured, and resumed her duties as domestic servant.

Remarks.—It will be observed, that the object sought in this operation was the contraction of the calibre of the vagina, which, as may be imagined, was exceedingly enlarged and flabby. The first step of the operation was the contraction of the vagina laterally, so as to prevent the tumour from falling down from above; the second step of the operation was for the purpose of contracting the vagina posteriorly as well as laterally, and finally adding to the extent of the perineum by contracting the orifice of the vagina at least two-thirds, so that should the prolapsus not be restrained by the lateral contractions, it could not extrude beyond the orifice of the vagina, but must necessarily fall upon the new perineum. As is proved by the result, all the objects sought have been fully attained, and it is scarcely possible to imagine a more satisfactory result from any operative procedure. It will also be observed that the benefits from this operation for vaginal cystocele will be equally, if not more, applicable to vaginal rectocele, as well as to prolapsus of the entire vagina, and also, with some slight modifications as to denudation of the mucous membrane, to prolapsus uteri.—*Lancet, April* 30, 1853, *p.* 412.

140.—*Ulceration of the Cervix Uteri Treated by the Application of Collodion.*—The 'Bulletin Générale de Thérapeutique' for January 15th, states that M. Aran employs collodion with success in certain cases of ulceration of the neck of the uterus, especially those which depend on, or are kept up by, the friction of the vagina against the cervix, directed either forwards or backwards. An illustrative case is related of a woman, aged 29, who was admitted into the Hôpital de la Pitié, who had for two years suffered from headache, dyspepsia, leucorrhœa, and dragging pains in the lumbar and hypogastric regions. These symptoms had for six months become much more severe. On examination, M. Aran found the uterus in a state of anteversion; the neck was large and extensively ulcerated, principally at the posterior part, which was directed towards the hollow of the sacrum. Rest, slight cauterization from time to time with nitrate of silver, baths every two days, poultices, enemata, and emollient injections, were tried for more than three months without any marked result. When lying down, the patient did not suffer; when erect, she was troubled with dragging sensations in the loins and hypogastrium. M. Aran applied collodion over the cervix, by means of a brush. The patient only felt a slight burning sensation when the speculum was removed. Three days afterwards, most of the collodion had remained, and the ulcer, which could be seen through it, appeared to be rapidly progressing towards cicatrization. The application of collodion was repeated three times within a month; and at the end of this period, cicatrization was nearly complete. At the same time, the dragging in the loins and the pains in the stomach had diminished, and the leucorrhœa had completely disappeared. The patient walked without pain or difficulty; her general health seemed excellent; and with the exception of a little *weakness in the loins*, and some heaviness of the head, she felt quite well.

This is satisfactory enough as far as it goes; but has the cure been permanent? On this subject we have some fears; for it is stated that "the anteversion is still much marked;" and in this case the tilting of the cervix backwards, and the consequent friction of its posterior lip against the vaginal wall, may reproduce the ulceration.—*Association Med. Journal, May* 27, 1853, *p.* 468.

141.—ON OVARIAN TUMOURS AS A CAUSE OF DIFFICULT LABOUR.

By Professor Litzmann, of Kiel.

The 'Deutsche Klinik,' for 1852, Nos. 38, 40, and 42, contains an article by Professor Litzmann, on the influence of ovarian tumours in producing difficult labour. The following is an abstract of this interesting paper.

It is a recognised fact, that conception is no more prevented by the degeneration than it is by the extirpation of one of the ovaries. Pregnancy seems in many cases to induce a more rapid growth of the ovarian tumour: this is especially true with reference to cystous and cancerous tumours. Fatty growths, as a rule, are not affected by gestation. Gestation is also prematurely interrupted by ovarian tumours; partly from their mechanical pressure on the uterus, and partly (especially in cancer) by the setting up of a profound disturbance of nutrition and innervation. Small ovarian tumours, which entirely or partially sink into the pelvis, are apt, from their pressure, to bring about abortion at an early period of pregnancy.

If pregnancy reaches its full period, the labour may end naturally, both as regards mother and child; but more frequently ovarian tumours give rise to impediments endangering the life of the mother as well as of the child. To thirty-one cases collected by Puchelt, jun., Dr. Litzmann has added fifteen from various sources, and one case described by himself—making in all forty-seven cases, in which labour was impeded by ovarian disease. Of these cases, in twenty-five the diagnosis of ovarian tumour was confirmed by section or by puncture: four of the tumours were simple cysts, three were compound, twelve were fatty cysts, and six were scirrhous growths. In the other twenty-two cases, the relation of the tumour to the ovary is not pointed out. The diagnosis during life is by no means easy, and can for the most part be considered only as more or less probable. In general, large tumours, lying entirely or partly over the entrance of the pelvis, are readily distinguished; while in small tumours, occupying the posterior part of the pelvic cavity, the diagnosis from other tumours which occur in this part is difficult. These ovarian tumours are always found in the space between the vagina and the rectum. The principal signs by which they can be distinguished from fibroid cystic growths, &c., between the vagina and rectum, are their gradual direction from the synchondrosis on one side toward the middle of the hollow of the sacrum, and the possibility of pushing them more or less easily above the entrance into the pelvis. But commonly the tumour is first detected only when it is entirely in the pelvis, and when its reposition during labour is not unfrequently prevented by the pressure of the gravid uterus or by adhesions. Fibrous and scirrhous growths from the inner surface are distinguished by their not easily mistaken place of origin, as proved on examination *per rectum*. More difficult, and often even impossible, is the diagnosis from other tumours in the recto-vaginal space, as cysts of the uterine ligaments, or of the Fallopian tubes, or tumours of the posterior wall of the uterus. As the latter are found very rarely to produce hindrance to labour, the detection of a tumour in doubtful cases affords a strong suspicion that it is ovarian. It is of especial importance to discover whether the tumour be solid, or a cyst, whose contents may be let out by puncture or incision. Fluctuation, if present in the least degree, will be best detected by examining the tumour simultaneously through the vagina and rectum in the intervals of the pains. The smoother and more equally developed the swelling is, the greater is the probability of its being a cyst.

Ovarian tumours are most dangerous to the progress of labour, when they are wedged more or less deeply in the pelvis; but tumours lying above or upon the entrance into the pelvis may, in certain circumstances, produce a great mechanical impediment.

The forty-seven cases related contain a notice of the progress of, in all, fifty-six

labours. In ten, natural delivery took place, mostly after tedious labour and severe pains. In two cases natural labour was assisted by the death and putrefaction of the child, in another by the pliability of a hydrocephalic head. One child was born alive; the reports do not state the fate of the others. Four of the mothers died.

In seven cases, the tumour was pushed above the pelvic entrance. In three of these cases, turning was performed; in one, the forceps were applied; and in three the labour proceeded naturally after the reposition of the tumours. Two of the children were still-born; and of five born alive, two soon died. One of the mothers died.

In nine cases, puncture or incision of the tumour was performed; once through the abdominal parietes; twice through the rectum; and in all the other cases through the vagina; always with the effect of diminishing its volume. In three cases, labour proceeded naturally; in three, perforation and extraction had to be performed; in one case, turning was necessary; and in one, the forceps were applied. Only one child was born alive; and five of the mothers died.

The forceps were applied in altogether eleven cases; once after puncture; once after reposition of the tumour; once to extract the head in a case of turning; and in one case they were ineffectual, and delivery had to be effected by embryotomy. In all the other cases, the forceps were the only instrumental means employed; in these, two of the children were still-born, and four of the mothers died.

Turning was performed in eight cases; in three after reposition of the tumour, and in one after puncture. The results to the life of the mother and the child are not stated with sufficient accuracy. Extraction in foot-presentation was performed in three cases; all the children were dead.

Embryotomy was performed in seventeen cases; in four after puncture (in which three of the mothers died), and in one case in artificial premature labour; of the remaining twelve cases, five were fatal to the mothers.

Premature labour was induced in two cases.

Of the whole, seven children were born alive, thirty-five were still-born, while there is no account of fifteen; of the mothers, thirty-two recovered, and twenty-four died.

In the treatment of these cases, a principal rule is not to delay operative interference too long, as it is very rarely that a favourable termination to the labour, as regards both mother and child, is to be hoped for from the powers of nature. By delay the life of the child is almost always sacrificed; its skull usually undergoing pressure between the tumour and the wall of the pelvis, as in a case of narrow pelvis. As regards the mother, besides the tediousness of the labour, the unavoidable bruising of the tumour and of the weaker parts of the pelvis is to be feared; and when the pains are violent, there is risk of rupture of the uterus or of the tumour. The result of every operation, to which recourse has been had at a late period, is doubtful.

During labour, we must first attempt to push the tumour, *per vaginam* or *per anum*, above the pelvic entrance. The most convenient period for this appears to be immediately after the rupture of the membranes, or as soon as more active pains have set in. If reposition is not possible, no time must be lost in ascertaining whether it is possible to diminish the size of the tumour by evacuation of its contents. This is best performed by puncture through the vagina with a curved trocar; and if the contents are too firm, the aperture may be enlarged by incision. If this operation is ineffectual, the choice lies between embryotomy and the Cæsarean section. Extirpation of the tumour during labour seems to have not yet been attempted. No help can be expected from the forceps or from turning, unless the size of the tumour have been previously reduced. With regard to the indication of premature labour, Dr. Litzmann thinks it but rarely indicated; as the narrowing of the pelvis by ovarian tumours is mostly so remarkable, that without previous reposition, a living child cannot be delivered even prematurely. He says that it should be performed only in those cases in which there is narrow pelvis as well as an ovarian tumour.—*Association Med. Journal, May* 27, 1853, *p.* 469.

142.—Tuberculosis of the Vagina. By M. R. Virchow.—Some time ago, I had

an opportunity of witnessing, in an old woman, an affection hitherto unknown to me. The patient had long suffered from dysuria, and there was found, after death, very extensive tuberculosis of the urinary organs. The upper part of the right kidney was in great part destroyed; the corresponding parts of the infundibula and pelvis in a state of cheesy ulceration; the remaining part of the renal pelvis and the right ureter studded throughout with small knots, partly grey and solid, partly white and ulcerous. Even in the cortical substance of the kidney there were found yellow knots. The urinary bladder was, in the upper part, thickly granular, with numerous little groups of grey knots; at the lower part, by the neck and urethra, it was hyperæmic, and studded with more isolated and finer grey tubercles. In the vagina there was found a similar eruption, mostly arranged in groups upon a base of red and injected mucous membrane, each single tubercle appearing as a fine grey pearl. They were sparingly distributed at the entrance of the vagina. They had not ulcerated in any part. Under the microscope they appeared to consist of granular masses, composed of soft cells,—a deposit which constitutes, in all cases, recently-formed tubercle. I saw none in the rectum or in the uterus of this patient.—*Virchow's Archiv.* 1853.

[Some time ago, Mr. Holmes Coote recorded a case of this disease in the lining membrane of the uterus.]—*Med. Times and Gazette, June* 11, 1853, *p.* 606.

143.—FURTHER RESEARCHES ON THE PATHOLOGY OF PHLEGMASIA DOLENS.

By Dr. Robert Lee, F.R.S.

[Various theories upon this disease existed until the memoirs of M. Bouillard, M. Velpeau, and the late Dr. Davis demonstrated that it consisted in an inflammation of the trunk and principal branches of the veins of the lower extremities. The following observations are taken from a paper read by Dr. Lee, before the Royal Medical and Chirurgical Society.]

In papers by the author, published in the fifteenth volume of the 'Transactions,' the actual condition of the iliac and femoral veins was ascertained, and he had been led to infer that inflammation of these veins gave rise to all the phenomena in puerperal women of phlegmasia dolens, and that it commenced in the uterine branches of the hypogastric veins, and subsequently extended from them into the iliac and femoral trunks of the affected side. Other cases had been recorded in the 'Transactions' of crural phlebitis following ulceration of the mucous membrane of the intestines. Experiments performed by Pirigott in 1839, and by Reumert in 1840, on dogs, showed that the action of chemical and mechanical irritants was limited to the vein on which the experiment was made, and the extension of the inflammation in the veins was not common; and Stannius, who had collected and tested all the facts bearing on the subject, doubted whether inflammation of venous trunks admitted of being excited by constitutional causes, independently of local irritation. A series of experiments on the veins of the lower animals, similar to those just mentioned, had recently been made, and a paper on phlegmasia dolens had been read to the Society during the present session, not founded on actual observation of the disease as it occurs in the human subject, but upon experiments on the veins of the lower animals in which phlegmasia dolens had never been observed. The object of the present communication was to submit to the Society the observations which the author had made during the last twenty-four years on inflammation of the crural veins. The paper contained the record of forty-three cases of phlegmasia dolens. The first nine cases were accompanied by *post-mortem* descriptions, and preparations illustrating the disease; and the author was led, from the whole of the facts thus adduced, to the conclusions he had formerly expressed, "that inflammation of the iliac and femoral veins gave rise to all the phenomena of phlegmasia dolens, and that the inflammation commenced in the uterine branches of the hypogastric veins, and from them extended to the iliac and femoral trunks of the affected side." The next series comprised the history of twenty cases, which the author thought furnished additional evidence in favour of this conclusion, though, in consequence of the recovery of the greater number of the patients, an opportu-

nity was not afforded of determining by dissection the actual condition of the crural veins. Nine cases followed, which demonstrated that phlegmasia dolens might occur wholly unconnected with pregnancy and parturition, and that in such cases the inflammation likewise commenced in the uterine branches of the hypogastric veins, and followed a course similar to what occurred in puerperal cases. In some of these the inflammation of the uterine veins was produced by cancerous disease of the os and cervix uteri; in others there was no organic disease of any kind previously existing. The concluding cases were five, in which crural phlebitis had followed inflammation of the saphena veins, and of the deep veins of the lower extremities, from fracture of the tibia and fibula, and the pressure of encephaloid tumours on the thoracic viscera. The author thought that these cases and dissections, as well as those of the distinguished authors whom he had quoted, proved, in the most conclusive manner, that inflammation of the iliac and femoral veins was the proximate cause of phlegmasia dolens; and that in puerperal women this inflammation commenced in the uterine branches of the hypogastric veins. It had likewise been demonstrated, by morbid anatomy, that phlegmasia dolens was a disease which might take place in women who had never been pregnant, and even in the male sex, and that, under all circumstances, the proximate cause was the same.

[Dr. Mackenzie observed that the facts alleged were, that certain lesions of the crural veins were developed in the progress of phlegmasia dolens; but he dissented from the conclusion that these lesions constituted the essence or proximate cause of the disease.]

The disease known as phlegmasia dolens was a very complex malady. It was one which was characterized, not only by a morbid condition of the veins, but by a morbid condition of the sensory, the motor, the lymphatic, and the secretory organs of the affected extremity also; and accordingly, in all well-marked cases of the disease, there was exquisite sensibility of the limb, especially in the track of particular nerves, loss of motor power, amounting sometimes to perfect immobility of the extremity, inflammation and obstruction of the lymphatic vessels and glands, and a general hot, tense, and elastic swelling of the limb, not simply arising from œdema, but possessing rather the character of active exudation than of passive effusion. Now, could all these lesions depend upon or be deduced from mere inflammation and obstruction of the principal vein of the extremity? Were they ordinarily observed in cases of simple, uncomplicated phlebitis? Or, if not, was there anything in the anatomical or physiological characters of the veins to justify our deducing them *à priori* from it? And if we replied to these questions, as he submitted that we must, in the negative, he should ask whether those who adopt this theory have undertaken any particular investigation for the purpose of determining this point? In other words, have they reproduced the lesion of the veins in a simple, uncomplicated form, and observed such consequences to follow? Now, to these questions, we must also reply in the negative, and it must be added that the whole matter rested purely on assumption. It had been assumed that, because the crural veins were found obviously diseased in fatal cases of phlegmasia dolens, that such lesions constituted the proximate cause of the disease. No further steps had been taken to establish the truth of this doctrine, and that, therefore, had been taken as a matter of assumption which ought to have been made a matter of demonstration. Further, he would observe, that the clinical history of the disease, and the progress of symptoms, did not support this theory. It was quite true that in some cases the first irritations commenced in the region of the femoral vessels, but in others it was far otherwise; in some they commenced in the back, in others in the hip, sometimes in the calf of the leg, and more frequently in the popliteal region. Again, one leg might be affected alone, or both lower extremities concurrently; or the disease, after having attacked one, may pass on to the other, or a superior extremity might be affected; and he had lately met with a case in which, after symptoms of the disease had successively declared themselves in the left lower and upper extremities, the malady ultimately established itself in the right arm, the whole right upper extremity being hot, swollen, and tense, the surface exquisitely painful, with loss of motor power, and a tense, corded condition of the basilic vein. Now, it appeared to him that these facts were inconsistent with the theory, that the proximate cause of the disease was essentially inflammation of the *crural veins.* They pointed to the existence of some more general and diffusive

cause, in regard to which it was probable that phlebitis itself was but a secondary affection. Again, he would point to the general experience of the profession as being opposed to this theory. It was now upwards of thirty years since it was first promulgated by his friend and teacher, the late Dr. David Davis; and, although the facts upon which it rested were well known, it was yet very far from being generally adopted. Thus, in this country, Dr. Burns affirmed, that the nerves were as much affected as the veins. Others regarded the lymphatic vessels as being principally affected; while many, dissatisfied with these restricted views of the pathology of the disease, preferred the theory of the late Dr. Hull, that it consisted in a general inflammation of the several organs and structures of the affected limb. So again, on the continent, the greatest difference of opinion existed respecting its nature and pathology; and while many affirmed that it consisted essentially in inflammation of the lymphatics, and others that it was a specific inflammation of the cellular tissue, nearly all agreed that, in its general characters, it differed widely from ordinary phlebitis. Now, this diversity of opinion existed, notwithstanding that all were aware of the facts upon which the phlebitic theory of the disease rested; and it afforded a powerful argument against it, because it tended to show that, when tested by general experience, and considered irrespectively of particular facts, and free from bias, it failed to account rationally for all the known phenomena of the disease, and consequently could not be regarded as its proximate cause. Then, in the sequelæ of the disease, circumstances were met with which are inconsistent with this theory. We know, for instance, that after an attack of the disease, the crural veins are generally left impervious or obliterated, and yet successive attacks of the disease may occur in the same extremity. Now, if it be true that the first attack left them in the condition described, it was difficult to understand how these vessels, having functionally ceased to exist, could again take on functional activity, and become the seat of active inflammation. So also it happened after an attack of the disease that the limb would be left for many years, or even for the remainder of life, in a weak, sensitive, and irritable condition, being easily affected by atmospheric and constitutional influences. It was easy to reconcile these facts with the notion that the nerves had been injured or damaged by the attack, but not with the idea that the veins alone had been affected. On all these grounds, then, it appeared to him (Dr. Mackenzie) that the phlebitic theory of the disease was either defective or erroneous. But assuming for a moment that it was correct, he would observe that it left much which was still to be explained. We had yet to learn the nature of that peculiar inflammation of the veins met with in this disease, which was so exceptional, and so different from ordinary phlebitis. Did it depend upon some peculiar disposition on the part of the venous coats to take on diffusive inflammation, or did it depend primarily upon the blood? If we adopted the first of these theories, we were bound to state the nature of the peculiarity, and the laws of its development. For to be satisfied with merely giving it a name, and to speak of it as a "specific" inflammation, was not to advance our scientific knowledge, but rather to take refuge, or to hide our ignorance, under the shadow of a name. If, on the other hand, we accepted the latter view, and regarded the venous inflammation as dependent upon some morbid condition of blood, then, indeed, we might reasonably account, not only for the peculiarities it presented, but for all the several lesions of other organs, and the structural changes with which it was associated. Upon this view, also, we might reconcile the conflicting opinions respecting the nature of the disease which had been held by different pathologists, and the variations which it manifested in its symptoms and progress in different cases. But, in accepting this view, we must forego the theory that phlebitis was the proximate cause of the disease, and regard it, as it really was, as a secondary rather than a primary phenomenon; related to the other lesions of the extremity, not so much in the order of cause and effect, as in being, like them, a parallel effect of some more general and diffusive morbific agent.—*Med. Times and Gazette, June* 4, 1853, *p.* 583.

144.—DEFICIENT MENSTRUATION COMMONLY TERMED CHLOROSIS.

By Dr. W. S. Oke, Physician to the Royal South Hants Infirmary.

[Dr. Oke observes:]

It has fallen to my lot to have had extensive experience in the treatment of this disease; and I can confidently affirm, that, where this atonic condition of the system is not complicated with any co-existing organic disease, the following simple treatment has seldom, if ever, failed of complete success. One of the pills (*a*) is to be taken every other night, and two of the pills (*b*) three times a day:

(*a*) ℞. Hydrargyri chloridi gr. xij; pilulæ aloes cum myrrhâ gr. xlviij; syrupi, q. s. Misce et divide in pilulas xij.

(*b*) ℞. Pilulæ ferri comp. ʒiij. Divide in pil. xxxvj.

If there be diarrhœa, the pills (*c*) are to be taken instead, leaving out, of course, the aperient:

(*c*) ℞. Pilulæ ferri comp. ʒiij.; pulveris opii gr. iv.; syrupi, q. s. Misce et divide in pilulas xxxvj. quarum capiat duas ter die.

It occasionally happens that an individual cannot swallow medicine in the form of pills, in which case (*d*) may be prescribed with equal success:

(*d*) ℞. Misturæ ferri comp. ℥viij.; decocti aloes comp. ℥iv. Misce. Capiat ℥iss. ter quotidie.

If necessary, the bowels may be regulated by the powder (*e*) taken in jelly:

(*e*) ℞. Hydrargyri chloridi gr. j.; aloes socot. pulv. gr. iij.; pulv. cinnamomi comp. gr. ij. Misce. Fiat pulvis noctibus alternis sumendus.

Amongst the better classes of society, the patient is often sent to the sea-side, or some other place, for change of air, without the aid of medicine; but this is at best a tedious remedy, if it be a remedy at all; whilst the treatment above recommended will bring about convalescence in six weeks or two months, without any change of locality.—*Association Med. Journal, May* 6, 1853, *p.* 392.

145.—*Neuralgic Menstruation, commonly termed Dysmenorrhœa.* By Dr. W. S. Oke.—[Frequently the menstrual secretion commences with and is accompanied by pain in the abdomen, back, and hips, varying in its degree of intensity. Frequently this may be alleviated by the hip-bath, opiates, belladonna, digitalis, purgatives, electricity; or, if inflammatory, by cupping over the sacrum; in other cases, however, no relief is obtained from any of these measures.]

Case. A lady, aged twenty-six, well formed, and of dark complexion, from a disappointed attachment had become deficient in her menstruation; and the diminution was accompanied with hysterical paroxysms, and the most intense pain of the uterine region, as soon as the secretion commenced. This state of extreme suffering continued for some years, and rendered her existence quite wretched. She had consulted a variety of medical men, and many remedies had been tried, to remove or alleviate her pains. She had been locally bled, had frequently used the warm hip-bath, with purgatives, opiates, antispasmodics, &c.; but all these means had fallen short of any permanent relief. The only remedy which had given her any respite was large doses of the liquor opii sedativus, although it always disordered her system. In such a case as this, as all ordinary remedies had been found unsuccessful, and reflecting that the indication of cure was clearly to subdue the morbid action of the uterus, and restore its normal secretion, I resolved to combine some preparation of iron with a sedative which would *not contract* the secernent cavity of the uterus; accordingly, she was immediately placed under the following treatment:

℞. Pilulæ ferri compos. ʒij; extracti conii ʒj. Misce et divide in pilul. xl. quarum capiat duas ter quotidie.

This plan was steadily observed through the interval up to the next period, after which she wrote to me, stating that it had passed with an increased secretion, and without suffering or hysteria. The treatment was persisted in for some months with complete success; and two years have elapsed without any return of suffering. I considered this an important case; and, as others of a similar character came under my notice, they were placed under the same treatment, and almost *always with a successful result.* Opium, in one shape or another, will doubtless, in

large doses, afford temporary relief to the severity of the pain in dysmenorrhœa; but as it tends to cause contraction of the uterine cavity, and, therefore, rather restrains than encourages the menstrual discharge, it is not a desirable remedy.

I do not wish it to be understood that the above treatment is recommended for the relief of all cases of dysmenorrhœa. When the symptoms indicate an inflamed condition of the internal membrane of the uterus, manifested by the discharge of fibrinous shreds and febrile disturbance of the system, such treatment is, of course, inadmissible, and the case must be treated according to its indications by local bleeding, by the warm hip-bath, digitalis, saline aperients, &c.

Dysmenorrhœa, as well as leucorrhœa, may be sometimes also caused by the local irritation of ulcers, either within or near the os uteri; and has been successfully treated by the application of the nitrate of silver, through the speculum—an instrument which has brought to light local causes of uterine disease, which had long escaped detection by the ordinary means. When, therefore, in dysmenorrhœa, the symptoms are found to resist general methods of cure, and when the intermenstrual mucous discharge from the vagina is ascertained to be purulent and mixed with streaks of blood, it may be fairly inferred that the painful character of the menstrual period is kept up by epithelial ulceration, too far within to be discovered by common observation, and too superficial to be detected by the finger. In such a case, the speculum should be employed without hesitation, in order to decide the question, and allow of the application of such local remedies as may be required. The speculum is, undoubtedly, a most useful instrument for the diagnosis and treatment of diseases of the distal end of the vagina and the os uteri; but where the symptoms are derived from induration and enlargement of the cervix uteri, the speculum might overlook what the finger will not fail to discover. Such cases are of no uncommon occurrence. The enlargement is most frequently found on the posterior part of the cervix, and in my experience is very difficult of cure, even when it is not of a malignant character. On the other hand, the practice of frequently introducing the speculum, to have ocular proof of the condition of the os uteri, before a fair trial of other remedies has been made, whatever may be the patient's class in society—whether she be in her own dwelling, or in a public institution—whether in a mansion or in a cottage—ought, in my judgment, to be considered an abuse of a most useful instrument, and condemned as a demoralizing procedure.—*Association Med. Journal, May* 6, 1853, *p.* 392.

146.—*Profuse Menstruation, commonly termed Menorrhagia.* By Dr. W. S. Oke.—[This condition may occur at any period of life, and be caused by either a plethoric or debilitated condition of the system, or by some local irritation of the uterus, as by a polypus growth.]

When menorrhagia takes place in plethoric habits, it is manifestly remedial, and ought not to be hastily restrained. In such a case the plethora is the object to be kept in view, rather than the discharge; and it will be best treated by a cooling diet, the recumbent position, and the mixture (*a*).

(*a*) ℞. Magnesiæ sulphatis ʒvj.; infusi rosæ comp. ℥vss.; syrupi simplicis ℥ss.; acidi sulphurici diluti ℥ss. Misce. Fiat mistura, cujus capiatur fluiduncia ter quotidie.

But when the discharge has continued for a considerable length of time, producing an anæmic condition and great debility, the indication of cure will clearly be to restrain the uterine flux as speedily as possible by general and local means.

The system may be strengthened by (*b*).

(*b*) ℞. Confectionis rosæ ℥ss.; infusi rosæ comp. ℥iij.; decocti cinchonæ ℥iij. Misce et cola.

Colaturæ adde,

Acidi sulphurici diluti ʒj.; tincturæ opii ♏xxx. Fia mistura, cujus capiat quartam partem ter quotidie.

Opium, in menorrhagia from this cause, is a valuable remedy, as it is found to increase the force of circular muscles; whilst henbane, hemlock, and belladonna relax them. Hence it is that the former contracts whilst the latter dilates the iris; and hence, also, the great use of opium in restraining profuse and dangerous

hemorrhage after parturition, by causing contractions of the muscular walls of the uterus.

The bowels, if necessary, should be regulated by gentle aperients, such as the following:

℞. Pulveris rhei, balsami copaibæ, āā 3ss. Misce; et divide in pilulas xij., quarum capiat duas horâ somni pro re natâ.

Turpentine and the secale cornutum have also been found efficacious in restraining menorrhagic discharge.

The best local remedy is the sulphate of alum hip-bath, which may be made in the proportion of twelve ounces of alum to two gallons of water. It may be used daily for about twenty minutes, first tepid, thence gradually reducing it to the normal temperature.

Should the discharge continue unabated, notwithstanding the use of the above remedies, a polypous growth or some morbid condition of the uterus is to be suspected; and the uterus must then be examined.—*Association Med. Journal, May* 6, 1853, *p.* 394.

147.—ON THE USE OF CINNAMON IN CERTAIN EXAMPLES OF MENORRHAGIA.

By Dr. T. H. Tanner.

[We frequently meet with cases of menorrhagia where no satisfactory explanation can be given of the increased discharge.]

The symptoms usually presented are briefly these: the catamenia appear regularly every twenty-eight days, and are at first only of the proper quantity; but, instead of ceasing after a duration of three or four days, they continue unabated for ten or fourteen, and occasionally even for three weeks. The general symptoms which arise from this debilitating discharge are just such as might be expected. There is general weakness, languor, mental depression, with pains in the head, loins, and so on: the patient suffering, it is to be remembered, not from any diseased condition, giving rise to the hemorrhage, but merely from the loss of blood itself. In other instances the discharge continues a less time, but the flow is more abundant, clots being frequently discharged; this variety is generally followed by leucorrhœa. My own experience tends to show that these forms of menorrhagia occur more frequently in unmarried than in married women; but for many reasons, and especially because of the class of patients from whom my observations are for the most part deduced, I would not say positively that such is the case.

Ailments of this class are at all times troublesome to cure, but those I am considering are particularly so, from the absence of any special indications for treatment. In some of them, indeed, it appears, at first sight, only necessary to keep the patient quiet, to administer astringents, especially such as act particularly upon the uterus, and to regulate the diet, in order to give the desired relief. But it will often be found that these means are quite inefficient, and the acetate of lead, gallic acid, the ergot of rye, oxide of silver, sulphuric acid, tincture of sesquichloride of iron, and similar remedies may be employed without any avail. In thinking over these cases I was led, from a remark made by Dr. Pereira, to try the use of cinnamon. In the last edition of the 'Elements of Materia Medica,' this gentleman says, when speaking of cinnamon, that "some writers regard it as acting specifically on the uterus" (vol. ii. p. 1307), and reference is then made to the writings of Sundelin and Wibmer. As far as I know, these are the principal authors who have recommended the use of this agent; for I am not aware that mention is made of it by gentlemen who have written on obstetrics and diseases of women in this country. Having thus been led to try the effects of this agent, and having derived the most beneficial effects from its employment, I have felt desirous of making its value more generally known, that its utility may be tested on a large scale.

That its beneficial action is really due to some specific effect which cinnamon exercises upon the uterus, and not any astringent property it may possess from the tannic acid which the bark and leaves of it contain in common with all the lauraceæ order of plants, is, I think, certain; and partly in confirmation of this view, it may be mentioned, that in a case of labour in which I employed it, it *appeared* not only *in a marked manner* to increase the severity and rapidity of the pains, but the patient,

who had in her previous labours suffered severely from flooding after the birth of the placenta, on this occasion lost only a very small quantity of blood. That this fortunate circumstance was due to the administration of the cinnamon I do not of course pretend positively to assert; the case is merely mentioned to give some colour to the opinion expressed that this agent acts specifically upon the uterus. Much clearer evidence of its value in such cases of menorrhagia as I have described, is, however, easily obtained. The principal points I would now refer to are, that it acts after the failure of other astringents; that it is most efficacious given alone, uncombined with other medicines; that if its employment be discontinued too soon, the discharge of blood returns; while, in a few instances, it has been found necessary, after an apparent cure, to resort to its employment for the two succeeding catamenial periods, when the menstrual flow, after continuing for three or four days, has not given any signs of abatement, and when the patient has begun to suffer from mental depression and the early symptoms of general debility. The form usually employed, and which appears to be the best, is that of the tincture, in drachm doses, using cinnamon water as the vehicle; it should be taken about every six hours, but not more frequently, as it is apt to give rise to nausea and vomiting. It is also better to continue its administration for about fourteen days after the symptoms which called for its employment have disappeared; and even then, if the case has been an obstinate one, a draught composed of it should be taken once daily for a month.—*Lancet, Oct.* 15, 1853, *p.* 363.

148.—CASE OF FIBROUS TUMOUR OF THE WOMB REMOVED BY INCISION AND ENUCLEATION.

Under the care of T. P. Teale, Esq., F.L.S., Surgeon to the Leeds General Infirmary.

[The patient in this case was fifty-six years old. She was extremely fat and anæmic. Since her last child, which was born nine years ago, she had been subject to profuse uterine hemorrhages. The pelvis was filled with a smooth rounded elastic tumour, descending as low as, and resting upon the perineum. It could not be ascertained whether it was pedunculated or closely attached to the surface of the womb. Mr. Teale says:]

The first step in the operation was to grasp the tumour by a pair of fenestrated forceps, as used in midwifery. By firm traction of the mass downwards, and movements of it from side to side, a great portion of it was gradually brought outside of the vulva; but, as soon as the forceps was removed, it receded within the pelvis. This was repeated two or three times, until at length I brought it so low down that Mr. Haymes could retain it by the grasp of both his hands, until I had applied around its upper part a strong whipcord, by the aid of Gooch's double canula. By this ligature, which was applied for the purpose of retention, and not for strangulation, the tumour was held downwards, and prevented from receding; and I was thus able to determine, without difficulty, the relations of the upper part of the tumour to the body of the womb. It was then found that the tumour was not pedunculated, but was imbedded at its upper part, by a broad base, in the substance of the posterior wall of the womb, which was now partially inverted by the traction which had been employed. By means of long curved probe-pointed scissors, I made a transverse incision through the investing membrane of the tumour, a little above the ligature that had been applied, large enough to admit the tips of three fingers, by which I was enabled, slowly and cautiously, to enucleate the imbedded portion of the tumour from the uterine wall; so that it only remained attached by the undivided portion of the investing membrane, which was now divided by the scissors, and the entire mass was removed. The process of enucleation resembled much the turning out of a fatty tumour from its cellular bed. I now examined the vagina, and found it occupied by an elongated mass, as thick as the wrist, which was immediately recognised as the inverted womb. By compressing this mass with the fingers, and pushing it steadily upwards, the womb slowly receded, and at length suddenly resumed its naturul position; after which the parts presented the ordinary characters which are observed in a person recently delivered of a child; but the womb felt of rather smaller size.

The operation was completed at 8 p.m. In two hours afterwards the patient was perfectly easy, free from hemorrhage, and her pulse 80.

On the following morning, she felt quite comfortable, having slept well, and her pulse was 80. So slight was the loss of blood, that during the night she had only soiled moderately one napkin.

The tumour weighed a pound and a half. Its length was seven inches; circumference at the broadest part, eleven inches; and at the line of incision ten and a quarter inches.

Remarks.—1. The practicability of enucleating some fibrous tumours of the womb, previously established, and further confirmed by this case, is a fact of great importance in the treatment of those fibrous masses which protrude from the interior of the womb, without having a peduncle or a well-defined neck. Although enucleation has been previously practised, I am not aware of the modification of the process by incision having been hitherto adopted. By the transverse incision of the investing membrane at its upper part, the trouble of enucleation is greatly diminished. I may also remark, that the process adopted in this case, as compared with the incomplete separation of the mass by ulceration consequent upon the application of a ligature, was a great saving of constitutional effort, as well as a much more complete removal of the disease.

2. In cases of large tumour of this kind, where it is impossible to determine by the fingers its mode of attachment, we may, by traction downwards, even beyond the external parts, accurately determine the nature of its connexion, and easily reach the site of operation. But, when inversion has been thus produced, it is important that the operator should, without delay, attempt the replacement of the womb; and he may do this, as in the present case, with the greatest hope of success, as the mouth of the womb, from long distension, is not disposed at the moment to contract with great force.—*Med. Times and Gazette, Aug.* 20, 1853, *p.* 194.

149.—*Case of large Cyst in the Labium Pudendi analogous to Hydrocele of the Spermatic Cord.* Under the care of T. P. Teale, Esq., F.L.S., Surgeon to the Leeds General Infirmary.—[For the notes of this case, and for the examination of the contents of the cyst, we are indebted to Mr. Scattergood, formerly an assistant surgeon at the Infirmary.]

Esther Gilbert, aged 55, married, was admitted into the Leeds Infirmary, June 24, 1847, on account of a tumour occupying the right labium pudendi. The tumour was of oblongo-oval form. It commenced at the lower part of the inguinal canal, which was apparently occupied by it, and extended downwards, distending the labium, and forming a pendulous mass hanging down between the thighs; fluctuation was distinct throughout its whole extent. She stated, that more than a year ago she perceived a lump, as large as a pullet's egg, in the upper part of the labium. Since that time it had gradually enlarged, but had never been painful. The bowels were generally costive, but never obstructed; her general health was pretty good; menstruation ceased three or four years ago. On puncturing the tumour with a grooved needle, a fluid issued, resembling in appearance thin dirty cream.

[On June 26, Mr. Teale tapped the tumour, and removed three pints of a dirty milky fluid, sp. gr. 1026. It had a slightly acid reaction, and was not rendered viscid by boiling with liq. potassæ. The microscope showed the presence of a large quantity of oil globules. The sac subsequently refilling, Mr. Teale, after tapping it, injected ʒij. each of tincture of iodine and rectified spirit of wine. As it refilled, it was again tapped, and double the quantity of the injection used. The cyst did not now distend so rapidly as on former occasions, but the patient soon afterwards died of some disease unconnected with the tumour. Mr. Teale suspected it to be a cyst developed in connexion with the round ligament, analogous to hydrocele of the spermatic cord in the male. No opportunity, however, was afforded of a post-mortem examination.] —*Med. Times and Gaz., July* 30, 1853, *p.* 113.

150.—On the Diet of Infants.—We have had a considerable experience in direct-

ing and observing minutely the rearing of infants upon a substitute for mother's milk. We never allow a healthy infant, for the first two months, to have any other food as a substitute for its mother's milk than cow's milk diluted with two-thirds of water, and well sweetened with fine sugar. Of this fare we sanction *an unlimited supply*, at intervals of from one and a half to two hours during the day, and three or four hours at night, provided it be sucked from a teat. Upon this simple fare, we have seen children grow up in the plenitude of health and strength. If the food be as thin as we have described, no evil can arise from over-feeding; and by allowing an interval to elapse between the times of feeding, digestion goes on better, and fretfulness is averted. To weak or scrofulous infants, the addition of a little mutton suet is good, or the same benefit may be obtained by giving two teaspoonfuls of cod-liver oil daily. Oatmeal, and all farinaceous foods, are unsuitable and unnatural for the first two months, and are certain to induce fits of feverishness and griping pains. After the second month, rusk, melted down in the sweetened milk and water, is useful; but the food must still be thin, and sucked from a teat by the infant. The exertion of sucking is, for many reasons, very salutary.—*Association Med. Journal, Aug.* 12, 1853, *p.* 714.

151.—*Dissection of a Portion of the Uterus and Placenta.* By Drs. Winn and Gall.—[These gentlemen were enabled to make this dissection through the kindness of Mr. Edward Snell. By this investigation the theories of Goodsir and other modern observers, and to a great extent that of the immortal Hunter, with regard to the placental circulation, would seem to be established.]

Under a power magnifying 270 times, the following facts were clearly manifested:—1. That the falciform duplicatures of the sinuses contained not only parallel, but *transverse muscular striæ*, indicating a high degree of contractile energy. As these bodies are situated at the openings of the sinuses, they must exert a powerful influence in arresting the flow of blood when the placenta is separated from the uterus. 2. That many of the delicate filaments which are seen passing from the placenta to the uterus, when these bodies are gently separated, are composed of looped capillaries, enclosed in a fine nucleated membrane. This membrane is probably a continuation of the chorion. These loops form, as it were, villi, and project, but do not open into the sinuses. They corresponded exactly with the description given of them by Goodsir. 3. That the tissues of the placenta presented numerous oil-globules, showing that the organ had fulfilled its destiny, and that it was, in fact, *effete*, and soon about to be thrown off in the same manner as a ripe seed-vessel is separated from the parent plant. Dr. Winn, in conclusion, stated that the placental circulation was a difficult question, and had given rise to a variety of conflicting opinions; he, however, considered that modern research had established many facts, and that it could now be safely inferred that the maternal blood entered the placental cells by the curling arteries of the uterus, and that into these cells the placental tufts projected. From these cells the blood is returned by the uterine veins without having left the maternal blood vessels. The fœtal tufts are therefore merely bathed in the blood of the sinuses, and the blood of the fœtus is purified by a sort of action similar to that which takes place in the branchiæ of fishes.—*Lancet, June* 11, 1853, *p.* 547.

152.—ON THE PATHOLOGY AND TREATMENT OF LEUCORRHŒA, BASED UPON THE MICROSCOPICAL ANATOMY OF THE OS AND CERVIX UTERI.

By Dr. W. Tyler Smith, Physician Accoucheur to St. Mary's Hospital.

[Dr. Smith believed that a microscopical examination of the various leucorrhœal secretions in different cases would account for the many discrepancies upon the subject. The results of the examination were not so satisfactory as could have been wished.]

The opaque, curdy, and creamy discharge found lying upon the surface of the vagina and the external portion of the cervix uteri, seems to the naked eye widely different from the viscid, transparent secretion seen issuing from the cervix uteri

Yet, under the microscope, both were found to consist of nearly the same elements, namely,—mucus or pus globules and epithelial particles, involved in a thick tenacious plasma. The only difference appeared to be in the relative quantity of squamous epithelium and mucous corpuscles. In the vaginal secretion the epithelium was in greatest abundance, while mucous corpuscles were in excess in the secretion from the canal of the cervix. It was evident, however, that the physical qualities of the discharges did not depend upon these variations, as the opaque, curdy, and the transparent viscid secretions were sometimes quite identical in their microscopical appearances. It became, therefore, an object to ascertain the precise structures which secreted these discharges, and the causes which modified their sensible and microscopical appearances.

[Dr. Smith lays great stress upon the value of the assistance he has received from Dr. Hassall and Dr. Handfield Jones, the former assisting him in the examination of the anatomy of the os and cervix uteri, and the latter in that of a large number of specimens of leucorrhœal discharges. The os and cervix uteri present a very large surface for the purpose of glandular secretion. Dr. Smith regards the cervix uteri to be an open gland, and supposes it to be the principal seat of leucorrhœa.]

I may here refer to a point which should not be lost sight of, bearing as it does upon the pathology and treatment of leucorrhœal affections, namely, the great similarity which exists between the skin and the mucous membrane of the vagina and the external portion of the os and cervix uteri. The resemblances of the mucous membrane in these situations are certainly much nearer to the cutaneous structures than to the mucous membranes of the more internal parts. This is particularly the case with respect to the dense epithelial layer of the vagina and os uteri; and the villi of the os uteri are, perhaps, more nearly allied to the papillæ of the skin than to the villi of the intestinal mucous membrane. These analogies are strongly confirmed by what is observed of the pathological conditions to which these parts are liable, and by the effects of therapeutical applications. It is well known that when inversion of the vagina occurs, as in procidentia uteri, the secretion of mucus is arrested, and the epithelial layer of the vagina becomes hard and similar to epidermis.

The epithelium found upon the follicular surface of the canal of the cervix uteri is cylindrical or dentated, like the epithelium just within the os. It is also ciliated low down in the cervix, and this character is continued into the cavity of the fundus uteri. The villi found in this portion of the cervix are covered by the dentated epithelium, just as in the case of the villi of the lowest part of the cervix. Mixed with the epithelium of the follicular surface of the cervix, a considerable number of caudate corpuscles are frequently found, each of them having a distinct central nucleus.

Thus it appears that the epithelium of the os uteri and external portion of the cervix is constantly squamous; that the epithelium just within the os uteri is cylindrical but not ciliated; and that in the rugous portion of the cervical canal the cylindrical epithelium becomes ciliated. Various opinions have been held respecting the situation in which the squamous epithelium becomes changed for the cylindrical, and also respecting the point at which cilia are first found. The above is the result, however, of the examination of the numerous uteri, made as early as possible after death, so as to anticipate the alterations of the cilia and epithelium by post-mortem changes.

The normal mucus secreted by the glandular portion of the cervix is extremely viscid and almost transparent. It adheres to the crypts and rugæ so as to fill the canal of the cervix. It consists chiefly of mucous corpuscles, caudate corpuscles, minute oil globules, and occasionally dentated epithelium, all entangled in a thick tenacious plasma. The tenacity of this plasma is so great that the mucous corpuscles and epithelial debris are arranged in strings within the fluid, and even individual corpuscles may be elongated by pressure upon the plasma, under the microscope. The mucus found at the lowest part of the canal of the cervix is thinner than that belonging to the glandular portion of the cervix, a circumstance which may perhaps be owing to the secretory action of the large number of villi within the margin of the os.

The mucus found in the upper part of the vagina, as the proper vaginal secretion, is no doubt chiefly secreted by the villi and epithelium of the upper extremity of the vagina and of the os uteri and external portion of the cervix.

The vaginal mucus, as first secreted, is pearly and semi-transparent, containing

numerous curdy particles, which, when they accumulate to any considerable amount, give it a creamy appearance. Examined microscopically, the mucus of this situation possesses nearly the same characters as the mucus of the cervical canal, except that it contains, as already mentioned in a former part of the present paper, larger quantities of squamous epithelium and epithelial debris. The only other essential difference is that the first is in the normal state invariably *acid*, while the second is always *alkaline*. It is to this chemical difference, and not to the preponderance of epithelium or mucous corpuscles, that we must look for the cause of the different outward appearances presented by vaginal and uterine mucus.

The use of the cervical mucus is probably two-fold. In the first place, it closes the cervix uteri, and defends the cavity of the fundus from external agencies as completely as though it were a shut sac. In the second, it probably affords a suitable medium for the passage of the spermatozoa into the uterine cavity.

The last number of the 'Cyclopædia of Anatomy and Physiology' contains an article on the Vesiculæ Seminales, by Mr. Pittard, in which he suggests the hypothesis "that the office of the vesiculæ is to secrete and keep in store a mucus of such a nature as is congenial to spermatozoa." Now, the secretion of the vesiculæ seminales, like the secretion of the cervix uteri, is viscid, transparent, and alkaline. The spermatozoa are deposited at the os uteri, and there can be no doubt that where impregnation takes place some days after the completion of menstruation, the spermatozoa have to make their way through the plug of mucus filling the cervical canal, and it is a plain inference that this mucus must be adapted for their ascent to the cavity of the fundus uteri. In this progress, the movement of the spermatozoa themselves and the action of the cilia of the cervical canal no doubt contribute.

In pregnancy, the whole of the transverse rugæ and the follicular structures of the cervix are considerably enlarged, and a thick plug of viscid mucus is secreted in the early part of pregnancy, which continues to seal the os uteri during the whole of gestation, until it is removed at the beginning of labour. Sir Charles Clarke was of opinion that the cervical mucus was not secreted at any other time than during pregnancy, but this is clearly a misapprehension. In many cases there is, throughout pregnancy, a very considerable excess of the cervical secretion, which may occur at this time without any marked local or general derangement; while, in other cases, the filling up of the cervical channel seems to be the measure of the healthy activity of the glandular surface, there being little or no discharge of mucus from the cervix into the vagina during the period of gestation. The profuse secretion of mucus, which lubricates the os uteri and the vagina, during parturition, is probably derived not from the vagina, but from the follicles of the cervix uteri.

From a consideration of the structure of the different parts of the utero-vaginal mucous membrane, and the facts connected with leucorrhœa, it is impossible to do otherwise than form the conclusion, that the glandular portion of the cervix uteri is the chief source of the discharge in the most common form of this malady. This has often been suspected to be the case to a great extent; but it could not be asserted as a positive doctrine until the minute examination of the glandular structure of the cervical canal had been made, nor until the proof of the absence of any other follicular or secreting surface adequate to the pouring out of a profuse leucorrhœal discharge, had been obtained.

Leucorrhœa, in its most simple and uncomplicated form, is, then, the result of a morbid activity of the glandular portion of the cervix. A follicular organ, which should only take on an active condition at certain intervals, becomes, from a variety of causes, constantly engaged in secretion. Instead of the discharge of the plug of mucus at the catamenial period, an incessant discharge is set up. In the first instance, the leucorrhœal discharge consists of nothing more than an unusual quantity of the elements found in the healthy mucus of the cervix. Quantities of mucous corpuscles and oily particles, with particles of epithelium entangled in the viscid alkaline plasma, which gives the mucus its clearness and consistence, are found. The mucus is seen at the os uteri, extending, in the form of a string, through the vagina to the os externum, and also adhering to the walls of the vagina in the curdy or creamy state produced by the vaginal acid. This form of leucorrhœa is to the cervix uteri what menorrhagia is to the cavity of the fundus uteri.

The quantity secreted daily is sufficient, in severe and continued cases, to prove a serious drain to the constitution; and the glandular cervix becomes, in some instances,

so excitable, that any unusual stimulus provokes a sudden flow of mucus. The relation of mental emotion to the cervical follicles becomes almost as intimate as the connexion between the mind and the lachrymal glands. Any sudden mental disturbance is, in such cases, followed by a sudden secretion and discharge of mucus into the vagina.

In some cases of leucorrhœa there is no discharge from the cervix uteri, and little or no implication of the glandular cervix; but the external surface of the os uteri and the upper part of the vagina secrete a copious discharge. When the surface remains unbroken, or the mucous membrane is only denuded of epithelium, the secretion consists of a plasma, containing multitudes of scaly epithelial particles in every stage of formation, from mere nuclei to the detritus of old epithelium. This may be called Epithelial Leucorrhœa of the vagina, as distinguished from the Mucous or Corpuscular Leucorrhœa of the cervical canal. This distinction is of use in practice, because it is in the epithelial form of leucorrhœa that astringent injections are most useful. When the morbid condition of the vagina extends deeper than the epithelium, the discharge is found to contain pus or mucous corpuscles in abundance, and it can hardly be distinguished by the microscope alone from the cervical form of leucorrhœa.

As regards the pathological condition of the mucous membrane of the os uteri and external portion of the cervix in chronic leucorrhœa, I may state that I have, with the aid of Dr. Hassall, examined microscopically many cases after death, in which abrasion or superficial ulceration, as it is termed, has existed; and the following is an abstract of the results.

The epithelium of the external portion of the os and cervix uteri and of the upper portion of the vagina may be partially or entirely removed; or there may be morbid patches in which the epithelium is here and there wanting. When, in analogous states, the epithelium has been removed in the living subject by diseased conditions, the mucous surface is of an intensely red colour from the presence of the naked villi with their vascular loops, and it conveys an impression of roughness and denudation upon examination by the speculum. To the touch the abraded surface feels erectile and "velvety," a term which has been very commonly applied to what has been considered ulceration of the cervix and os uteri. The villi do, indeed, in this condition stand out somewhat like the pile of velvet, and in some cases the villi themselves are considerably enlarged.

In other cases there is not merely loss of the dense epithelium, but the villi, both of the external surface of the os uteri and of the mucous surface within the labia uteri, are destroyed in patches. In that condition of the os uteri, which, upon examination after death, would be pronounced to be undoubted superficial ulceration, the state which generally obtains is partial or entire loss of the epithelial layer in circumscribed patches, and here and there the loss or partial destruction of the villi. This gives an eaten, corroded appearance to the mucous surface. Such a condition of the os may be limited in extent, or it may be spread over the whole of the os and external cervix, and pass within the labia uteri. Sometimes, small circumscribed ulcers are seen, in which the denuded, or partially denuded, villi are found surrounding the edge of the small ulcer, the area of the ulcer itself being bare of villi, or the ragged debris of villi and their vascular loops appearing at the bottom of the ulcer. These little ulcers appear commonly in eruptive disorders of the os uteri; but they represent perfectly the loss of epithelium and villi, and to a more complete extent than is found in diffused patches of diseased surface.

In one case which I examined after death, not only the villi, but portions of the lower rugæ in the glandular portion of the cervix were eaten away.

The causes which produce these pathological conditions are various. They may arise from vaginitis; from mechanical injury, as in parturition; or from inflammatory states of the os uteri, having an independent type, though I think this is of comparatively rare occurrence; or, and which is more frequently the case, they may be caused by eruptive disorders of the mucous membrane, similar to herpes and eczema in the skin. The os uteri is frequently covered by small vesicles, which can hardly be distinguished from herpes or eczema. These eruptive conditions strongly mark the analogies between this tract of mucous surface and the skin. I have observed cases in which an occasional herpetic eruption upon the os uteri always produced *herpes præputialis* in the husband, showing very clearly the herpetic nature of the

disorder. But by far the most common mode in which loss of epithelium takes place is, I believe, as a secondary result of chronic irritation of, and discharge from, the glandular surface of the cervix. In my experience, it has been rare to find a morbid state of the os uteri, without the exudation of a gummy, albuminous discharge from the canal of the cervix. In the case of wax models of the so-called ulceration of the os uteri, submitted to the Society on a former occasion by Dr. Murphy, I observed that in nearly all of them the artist had correctly represented the viscid cervical mucus as issuing from the os uteri. When the discharge from the cervix uteri co-exists with lesion of the os uteri, it appears to me that the *alkaline* discharge lying upon the surface of the os and external portion of the cervix, irritates those surfaces accustomed to the presence of an *acid* secretion, and occasions the rapid shedding and loss of the epithelium, and ultimately the injury or destruction of the villi beneath. I believe this to be the true pathology of the greater part of what has been called inflammatory ulceration of the os and cervix uteri.

The loss of portions of the epithelium is so common in cases of confirmed leucorrhœa, that there must be some frequent and common cause which produces it; and it appears to me that it is more reasonably accounted for in this way than in any other. We know that the mucous surfaces, accustomed to acid secretions, are irritated by the continued presence of alkaline states, as, for instance, the stomach under the constant use of alkalies, the bladder in the secretion and retention of alkaline urine, or the urethra in spermatorrhœa. Many other facts might be urged to show that the diseased states of the os uteri in leucorrhœa are secondary to the morbid condition of the cervical canal.

The secondary character of the so-called ulcerations of the os uteri, and their dependence upon uterine catarrh, has been suspected by several writers upon uterine disease. But in the absence of a definite knowledge of the structure of the parts concerned, it was objected that uterine catarrh is not invariably accompanied by lesion of the os uteri, and that ulceration might exist without any catarrhal flux from the uterus. These reasons, advanced by Dupareque, were thought so valid and unanswerable by Dr. Evory Kennedy, that he relinquished the idea as preposterous. But I submit, that if the excessive cervical secretion be a general cause of abrasion of the os uteri, it would not be extraordinary to meet with some cases in which, notwithstanding the leucorrhœal flow, the epithelium remained healthy, from the existence of greater thickness or vitality, or from the unirritant nature of the discharge, in a certain proportion of cases. I have carefully observed a large number of cases, and although I have sometimes found cervical leucorrhœa without any marked derangement of the os uteri, I have very rarely found the os uteri abraded without the existence of disease of the glandular portion of the cervix, unless in cases of eruptive disease. I have also found in treatment, that the best way to restore the os uteri is by restraining the cervical secretion; but that the morbid state of the os uteri may be remedied again and again, with a tolerable certainty of the recurrence of the disorder, unless the cervical secretion be brought back to the healthy condition.

When the changes of structure above described have taken place in the os and external surface of the cervix, the nature of the leucorrhœal secretion is, as I have already observed, materially altered. The morbid os and cervix now secrete mucus and pus in abundance, blood globules escape from the vessels, and large quantities of scaly epithelium in every form, from mere nuclei to the perfect scales and epithelial detritus, become mixed with the secretions of the cervical glandular structure. But one circumstance is somewhat remarkable. As the epithelium of the cervical canal is cylindrical, it might have been expected that cylindrical epithelium would constantly be found in the discharge issuing from the cervix. Yet the presence of the debris of cylindrical epithelium in this discharge is comparatively rare. More than this, scaly epithelium is frequently found mixed with the viscid secretion coming from the canal of the cervix. I have frequently drawn out a string of mucus from the cervix, with a long forceps, and it has almost invariably contained scaly epithelium. Whether this arises from the difficulty of obtaining any of the cervical secretion perfectly pure or not, or whether the cervix uteri has the power of imbibing particles of scaly epithelium from the os, I am not prepared to say, but the fact is as I have stated it.

The pathological results of the preceding investigation may be stated as follows:— If any division of leucorrhœa be attempted, we must recognise two principal forms

of this disorder. Of these, the first and by far the most frequent is the *mucous* variety, consisting chiefly of mucous corpuscles, and secreted by the follicular canal of the cervix. The second is the *epithelial* variety, in which the discharge is vaginal, or is secreted by the external surface of the os and cervix, and consists for the most part of scaly epithelial debris. These two varieties may of course exist in various degrees of combination. As regards the morbid changes occurring upon the os and cervix uteri (the so-called ulcerations) two grades of alteration are found; one of which, and by far the most common, may be called *epithelial abrasion*. In this, the epithelium is the only structure deficient. In the second grade, the villi, and occasionally the base from which they spring, are affected by a superficial ulcerative process, which may be designated as *villous abrasion*, *erosion*, or *ulceration*.

I have already referred to the occurrence of eruptions upon the os uteri, a circumstance which has often been observed by uterine pathologists. But there is one state of the os and cervix uteri which is deserving of particular attention, namely, that in which the so-called ovules of Naboth occur. The vesicles which have received these absurd designations are generally considered to be obstructed mucous follicles, but they are often found in situations where mucous follicles cannot be detected; and after a careful examination of several of these cases, they appear to be rather a form of vesicular disease, having its first seat in the deeper structures of the mucous membrane. This affection is generally attended by profuse discharge from the cervix, with a patulous and engorged state of the os uteri. These vesicles are found in the upper part of the vagina, upon the os uteri and external portion of the cervix, within the os, and upon the penniform rugæ, as high up as the summit of the rugous columns. The vesicles mature and rupture one after another, leaving ulcerated spots, which may either heal or spread over the mucous surface. They reach their greatest size at the os uteri. Sometimes they enlarge without discharging their contents, and I suspect it is in this way that vesicular polypi of the os and cervix uteri are formed. I may mention, that Dr. Hassall suggests that the solid polypi found attached to the cervix take their rise in enlarged villi of the cervix uteri.

The covering of these transparent vesicles is a thin fibrous membrane. Their contents are a white pearly coagulated matter, in which numerous granular corpuscles, mucous corpuscles, and minute points of oily matter are found.

In the middle of the walls of the cervix what appear to be undoubtedly obstructed mucous follicles are sometimes seen. But the appearance and contents of these are very different from the Nabothian bodies. They have the appearance and consistence of curd, and under the microscope contain myriads of mucous corpuscles, with abundance of single fat globules, and occasionally large agglomerations of oily matter.

There is another state of the os and cervix uteri in leucorrhœa of considerable importance, but which has hitherto, as far as I am aware, escaped attention. In long-continued irritation of the canal of the cervix, partial inversion of the lower part of the cervical canal may take place, causing increased pain and distress, and an aggravation of the leucorrhœal symptoms. The lower part of the canal of the cervix is frequently so inverted that it comes into contact with the vagina, and the penniform rugæ may be sometimes seen upon examination.

When the os uteri is open, and the cervix partially everted, so as to bring the penniform rugæ into view, an appearance is produced which has been considered a form of ulceration, called the "cock's comb" granulation; the serrated edges of the so-called ulcer being, in reality, the penniform rugæ presenting at the os uteri, denuded of epithelium, and with the villi florid and enlarged. The villous surface of the partially inverted cervix very much resembles the granulations of an ulcer to the naked eye, and has no doubt been frequently mistaken for them.

The simply open state of the os uteri, generally found in leucorrhœa, appears to me to depend, not upon muscular dilatation, as commonly supposed, but upon a development of the os and cervix caused by local irritation, and to be somewhat similar to the development of these parts in the early months of gestation.

It remains to make a few remarks on the practical deductions which may be drawn from the present investigation. The demonstration of the extensive glandular structure existing within the os uteri, at once points to the influence of constitutional causes in the production of leucorrhœa, and shows the true reason why this affection should be so common in women of strumous habit and leuco-phlegmatic

temperament. It also explains the effect of the excessive glandular secretion upon the constitution; and above all, it vindicates the importance of constitutional treatment in this malady. It further directs attention to the more rational application of topical remedies. If, as I believe, the morbid conditions of the os uteri either depend in most cases upon eruptive disorders, having their cause in the condition of the constitution, or are secondary to the morbid flow of alkaline mucus from the cervical canal, it is evident that the profuse application of caustics, as recommended in the French school of uterine pathology, is unnecessary and unscientific. We ought not to use these measures in eruptive conditions of the os uteri, any more than we should use them in similar diseases affecting the skin. Nor should we use them in cases of secondary abrasion, from the irritation of the cervical discharge, as we should be only dealing with an effect, while the cause of mischief remained. This would leave comparatively few cases for their application. I admit that leucorrhœa of the cervical canal is sometimes cured by the use of caustics to the os uteri, but, in these cases, they seem to act as counter-irritants to the glandular structure, and thus to effect a cure indirectly. I believe I have seen cases cured by blistering the cervix with acetum cantharidis more readily than by caustic, and on the same principle. It is of little use to direct attention to the os uteri if the interior of the cervix be neglected. Any abrasion or other lesion of the os uteri may be relieved by topical treatment; but if the cervical discharge continue, the os uteri is seen to renew its morbid state again and again.

The indications of treatment which I have proved to a considerable extent in practice, arising from the minute knowledge of the anatomy of the os and cervix uteri, and the study of its pathology in leucorrhœa, appear to me to be the combination of constitutional medicines and regimen, with local applications. But it is obvious that, in the majority of cases, local measures, to be of use, must be applied, not to the vagina nor to the os uteri, but to the canal of the cervix. With respect to the common method of treatment by injections, these are of great service in vaginal or epithelial leucorrhœa, where the walls of the vagina and the external surface of the os and cervix uteri are the seat of disorder; but in cervical or mucous leucorrhœa, little good is obtained unless some portion of the injection is passed into the cervix. As the os uteri is frequently patulous to some extent, this may occur in their common use, but only to a limited extent. To make the entrance of injections into the cervical cavity more certain, I generally recommend the injection of plain water, in the first instance, to clear away the mucous plug from the os uteri, and then the use of medicinal injection. Or, as nearly all the injections used in leucorrhœa coagulate the cervical mucous, and diminish the size of the cervical plug, I direct a first injection to be used with this view, to be followed, in a short time, by a second quantity of injection, to act upon the mucous membrane of the os uteri and cervical canal. It is singular that, almost without exception, the substances used for injections in leucorhœa have an acid reaction. In intractable cases I apply astringent solutions, such as a concentrated solution of tannin, or a solution of the nitrate of silver, or a solution of iodine, applying them directly to the canal of the cervix by a camel-hair pencil. But I am at present engaged in the attempt to determine the best methods of local and general treatment.—*Medico-Chirurgical Transactions, vol. 35, p. 377.*

ON CHOLERA.

[We took some pains in our 20th volume (for July to December, 1849) to collect and arrange the many opinions on Asiatic Cholera, both as to its pathology, causes, and treatment, which were published at that time. For an interesting epitome on this subject, therefore, we refer the reader to vol. 20, where he will gain all the information which seemed then to be known.

We now add some other opinions which have been published since the epidemic made its appearance in the present year of 1853. But we do not think it necessary again to enter into so minute an analysis as we did before, because we do not perceive that there has been any very material addition to our previous knowledge on the subject. We will, therefore, merely subjoin some of the opinions on the treatment of this disease which seem to us to be the most sensible—although we must acknowledge that the difference of opinion has sometimes greatly amused us.]

153.—*Blood of Cholera Patients.*

[Dr. William Robertson, of Edinburgh, Editor of the 'Monthly Journal,' draws the following conclusions from thirty-five chemical analyses of the blood taken from cholera patients in different stages of the disease:]—1st, That anemic subjects are more prone than others to attacks of cholera. We have already seen that in all the six cases composing Table I., the per centage of globules was low. We know that during the late epidemic a large proportion of our patients were females,—that of these many were pregnant, nursing, or exhausted by uterine discharges. We know that the disease was, with very rare exceptions, confined to the poor, and that the ill-fed and dissipated were its usual victims. It seems not unnatural to conclude that an impoverished condition of the blood predisposes to cholera. This consideration is calculated to increase our faith in the efficacy of sanitary means as a prophylactic against cholera. Pure air, cleanliness, abundance of wholesome food, temperance, and regular exercise, the means, in short, by which the physical powers of the body are most certainly developed, are the best securities against disease. 2nd, I think that it is shown by the first three tables, that the changes which so rapidly affect the blood during cholera, are concentration of the serum and globules, from the abstraction of water, together with a proportionate loss of salts. 3rd, The changes subsequently effected during the stage of reaction are far more complex. I shall only allude to the chief of these. Water seems to pass rapidly into the circulation, dilutes the serum, and causes a notable diminution in the proportion of its salts. By direct analysis it has already been shown, that the relative proportion of salts is smaller during the period of reaction, than at the commencement, or during the violence of the disease. This result is, I think, fatal to any theory which proposes to explain the phenomena of the stage of collapse by reference to the deficiency of salts, and holds out no encouragement for the practice of injecting saline solutions into the veins during the algide stage. But although the dilution of the blood consequent on the absorption of fluid, explains the small per centage of serous salts during the stage of reaction, it will not explain the undiminished amount of blood corpuscles, the increase of fibrine, and the rapid disappearance of albumen from the serum. Is the increase of fibrine connected with inflammatory processes in the lungs and kidneys? Are blood corpuscles formed during returning health with great rapidity, so as to maintain their normal standard while the serum becomes diluted? How is the superfluous albumen which manifestly leaves the system disposed of? The last of these questions can alone be confidently answered. The albumen which quits the serum is, in part at least, excreted by the bowels and kidneys. It has been detected in the stools, and, in a very large number of cases, has been detected in the urine passed during convalescence. Dr. James Begbie, who, at my request, made about 100 examinations of the urine passed by my cholera patients, found albumen in about 80 per cent. of the first urines of convalescence, and in about 76 per cent. of the whole number of *specimens* examined. In several of the cases in which no albumen was detected,

the urinary secretion had been restored for some hours, or even days, but the earlier portions of urine passed (in which we should naturally have expected to detect albumen) had not been preserved for analysis. I think that Dr. James Begbie's analyses, which he has carefully recorded and put at my disposal, prove that the presence of albumen in the urine of reaction is the rule—its absence the exception; and render it highly probable that the kidney is one of the channels by which the blood is relieved of its superfluous albumen. The restoration of the urinary secretion I have always regarded as the most important step towards convalescence. If the secretion be long suspended after the stage of collapse has given way to reaction, the prognosis is most unfavourable. The patient soon falls into a drowsy state, moans incessantly, but gives occasional indications of consciousness, by returning a short answer to questions put in a loud voice and frequently repeated. From this state I have seen few recover; it passes into profound coma, and the fatal event is sometimes preceded by general convulsions. There can, I think, be no question that these symptoms are caused by the presence of urea, and possibly of other principles, in the blood. The researches of Dr. Christison and others have made us familiar with similar symptoms, produced by a like cause, in the later stages of Bright's disease, and in certain cases of our short or relapsing fever. But in no disease has the urea been found in the blood in such quantity as in cholera. During the reaction stage, in particular, it seems to be formed with great rapidity, amounting, in some instances, as has been proved by analysis, to nearly 2 parts in 1000 of blood. The important therapeutic indications which this fact suggests are sufficiently obvious. The danger most to be feared is the formation and retention of urea in the blood. Safety must be sought in the employment of diuretic remedies, and especially of such as are believed to possess the property of expelling urea from the system.—*Monthly Journal of Med. Science, Sept.* 1853, *p.* 250.

154.—*Pathology of Cholera.*

[Dr. Sibson makes the following sensible remarks previous to his relating a case of Asiatic cholera:]—Admit that cholera, like typhus, is nothing more than the effect of a virulent principle, which at certain times, and in certain places, is carried by the atmosphere, and all the symptoms are easy of explanation, and a treatment which might almost be called rational naturally flows from the hypothesis. The vomiting and dejections are a kind of violent attempt at elimination; the blood, perhaps still charged with the virus, becomes thick from the loss of its watery parts, and the two causes (one in some degree vital, and the other mechanical) give rise to an arrest of functions, to congestion in the cerebrum, and eventual death. When the vomiting and purging are over, the patient has to contend against—first, the weakness consequent upon the loss of so much albuminated fluid, and, secondly, the remains of the virulent principle in the inspissated blood left after the loss of so much water; and if his medical attendant can keep him alive until the blood becomes more dilute, and the poison thereby less active, he will have the credit of a cure

That the poison once admitted into the circulation causes a kind of irritation in the blood is extremely probable, and the consequence of that irritation and abnormal state is an undue activity of the veins and glands of the intestinal and gastric mucous membrane. It may thus be doubted whether diarrhœa be really and truly a premonitory symptom; one might, on the contrary, be inclined to maintain that looseness of the bowels does harm during an epidemic of cholera only so far as it tends to weaken the individual. But his diarrhœa will be as free from serious results as it is in ordinary times, if the subject do not inhale a portion of atmospheric air sufficiently charged with the virulent choleraic principle.—*Lancet, Oct.* 1, 1853, *p.* 311.

155.—*Prevention of Cholera.*

[Dr. Snow observes, that if cholera commenced with general symptoms, we should not know by what channel the morbid influence had entered into the system: as it is, however, it is quite clear from the disturbance of the alimentary canal, that the effects which follow in the course of the disease, are only the result of what has occurred in this organ.]—The exudation of the watery part of the blood into the stomach and bowels causes the faintness and sinking. The blood which remains in the vessels being too thick to pass readily through the capillaries, both the pulmonary and systemic circulations are impeded; hence the difficulty of breathing, the

general coldness, and state of collapse. How far the cramps depend on irritation of the nerves of the alimentary canal, and how far on the want of fluidity and proper circulation of the blood, is not very evident; but it is quite certain that they do not depend on any cholera poison circulating in the blood, for the cramps and all the symptoms of collapse disappear for a time on the injection of a weak saline solution into the veins, which merely replaces what has been lost by the bowels. It is evident from this circumstance that the blood is not poisoned in cholera, except in cases of secondary illness, when it becomes charged with urea and other excretory matters, owing to congestion of the kidneys. The primary and essential morbid actions of cholera being confined to the alimentary canal, it follows that the materies morbi of cholera must find access to it by being swallowed, that it must increase and multiply there, and be discharged to be a source of danger to others.

Before pointing out the precautions which these views suggest, it will be well to examine what light they throw on the progress of cholera, and what confirmation they receive from general and particular facts connected with its history. It has been observed, in all parts of the world, that nothing assists the spread of cholera more than want of personal cleanliness. When we consider how free the evacuations from the stomach and bowels of cholera patients often are, both from colour and odour; how suddenly and copiously, and with what force they are generally discharged, it is evident that the hands, both of the patient and his attendants, are liable to be soiled with them. Unless great care is taken to wash the hands frequently, and more especially before taking food, or handling and preparing the food of others, small quantities of the evacuations must necessarily be accidentally swallowed. The influence of dirty habits in aiding the spread of cholera is thus clearly accounted for. It is analogous to what occurs among house-painters in regard to lead-poisoning. Those of cleanly habits escape; while others constantly swallow a little paint with their food and become affected with colic. The scarcity of water, of course, is an obstacle to cleanliness, even when the inclination prevails; and this has frequently been observed to be connected with the unusual extension of cholera in a town or neighbourhood. The reason why medical men, and other persons of cleanly habits, who do not stay to eat and drink in the sick room, are scarcely rendered more liable to cholera by their avocations, while it often fares differently with the social visitor, is perfectly explained by the above views. It is evident, also, why the medical man can make inspections of the dead bodies of cholera patients with impunity; while they who wash and lay out the body often suffer. The medical man is certain to wash his hands after his operation, while the persons who perform the other offices mentioned, especially among the poor, are almost as certain to neglect that duty. It is obvious that, where a whole family live, night and day, in one small room, in which the cooking is done and the meals are eaten, that the food is very liable to become contaminated, in the event of a case of cholera occurring; and where several families live in one room, the risk amounts almost to a certainty.

[The cholera poison may not only act upon the system when it is taken in with the food, but when it is diffused also in a very large quantity of water. One great cause of the spread of cholera is that, owing to bad drainage, the evacuations of patients are allowed to remain on the surface contaminating all who come in contact with them; and besides, by percolating through the earth, they infect pump-wells and other supplies of water.]

The measures for the prevention of cholera which are suggested by the circumstances and views above detailed, may be divided into those which can be carried out in the presence of the epidemic, and those which, as they require time, should be taken beforehand.

The measures which should be adopted during the presence of cholera are:—

1st. To take care that there is a hand-basin, water, and towel, in every room where there is a cholera patient, and to take care that they are used by the nurse and other attendants, more particularly before touching any food.

2nd. To immerse the soiled linen of the patient and his bed in water as soon as it is removed, until such time as it can be washed, lest the evacuations should become dry, and be wafted about as fine dust.

3rd. To take care that the water employed for drinking, cooking, and preparing *food (whether* it comes from a pump-well, or is conveyed by pipes), is not contami-

nated with the contents of cesspools, house-drains, or sewers; or, in the event that water free from suspicion cannot be obtained, to have it well boiled and, if possible, also filtered.

4th. When the cholera prevails very much in the neighbourhood, to have all the provisions which are brought into the house well washed with clean water, and exposed to a temperature of at least 212° Fahr., or to make them undergo at least one of these processes.

5th. When a case of cholera appears among persons living in a crowded room, the healthy should be removed to another apartment where it is practicable, leaving only those who are useful to wait on the sick.

6th. As it would not be practicable to clean out coal-pits and establish privies and lavatories in them, or even to provide the means of eating a meal with anything like common decency, when the cholera makes its appearance, the time of working should be divided into periods of four hours instead of eight, so that the pitmen might go home to their meals, and be prevented from taking food into the mines.

The measures which can be taken beforehand to provide against a visitation of cholera, are,—

7th. To effect good and sufficient drainage.

8th. To provide the inhabitants with an ample supply of water, which is quite free from contamination with the contents of sewers, cesspools, and house-drains, or the refuse of people who navigate the rivers.

9th. To provide model lodging-houses for the vagrant class, and sufficient house-room for the poor generally.

10th. To inculcate habits of personal and domestic cleanliness among the people everywhere.

The advice and directions which are issued respecting cholera by authority, are directed almost entirely against dirt and nuisances; but, unfortunately, they are perfectly silent respecting that particular kind of dirt which does the mischief. The Board of Health directs its attention more particularly to offensive effluvia, as a supposed cause of cholera. When the ready means for the communication of this disease exist, it often happens, for very evident reasons, that offensive gases are not altogether absent; but it has been satisfactorily proved, that the effluvia arising from the decomposition of vegetable and animal matters have nothing whatever to do with cholera.—*Med. Times and Gazette, October* 8, 1853, *p.* 367.

156.—*Treatment by Calomel.*

[Dr. Ayre, of Hull, observes that in the epidemics of 1832, and 1849, calomel was the sole and exclusive remedy he employed. In excusing the imperfect nature of the report, he observes:]—As I have found myself obliged, from the circumstance of the disease being already amongst us, to anticipate the time when I should give the result of the communications to be made to me on the treatment, I must now content myself with giving such a report as the occasion will permit. From one of my correspondents I have received a report, in a tabular form, of upwards of eighty patients in the collapsed stage who were recovered by this treatment, and the true nature of whose disease is shown by an amount of calomel taken, which none but cholera patients in collapse could take with impunity, but which they received without any inconvenience ensuing, not more than four or five of the whole number having been affected with ptyalism, and none to a troublesome degree. It would be occupying too large a space in your columns to insert the whole of the cases, and I shall content myself with presenting twelve of them, taking them in the order in which they have been sent to me.

From the following table of cases, it will be found that the average quantity of calomel taken was ninety-five grains, and that the duration of the disease was brief, which corresponds with my experience; for under this treatment, the patients come from a state of disease to one of comparative health, I having on many occasions found my patients sitting at their meals with their family on the second or third day after having been in a state of pulseless collapse, so speedily are they restored when the secretion of the liver is renewed. I here subjoin the letter of my correspondent, which accompanied the cases I have copied above, and which confirms in every way my own experience in the nature and results of the treatment:—

"In answer to your inquiries, I may say that only a few were affected with *ptyalism* in the cases of cholera, and these few would not have been so but for the anxiety of patients to continue the pills when a change for the better took place. As to consecutive fever, I hardly ever knew of a case under the calomel treatment. The cases of collapse occurred before I saw these as a general rule, because, if seen early, they rarely went into collapse. Stimulants were not given by me, with the exception of a few drops of ether or camphor-water. One or two drops of laudanum were given with each dose of calomel, up to twenty-four or thirty drops taken on the whole, when it was discontinued. I had an opportunity of seeing that treatment carried out to the letter in thirty-three, being at that time apprenticed to a gentleman who fully carried out your treatment."

Twelve Cases of Cholera in the Collapsed Stage recovered by the Use of Calomel in small and frequently-repeated Doses.

First Visited.	Date of Recovery.	Number of One-grain Pills given.
A. August 14.	August 20.	50
B. " 27.	Sept. 8.	134
C. " 23.	August 31.	132
D. " 30.	Sept. 1.	60
E. " 31.	" 9.	72
F. Sept. 1.	" 11.	72
G. " 2.	" 5.	156
H. " 4.	" 7.	42
I. " 4.	" 9.	43
K. " 5.	" 9.	36
L. " 9.	" 15.	256
M. " 11.	" 13.	96

In preparing to address you, I intended to give in detail a further report of the testimony supplied to me by various correspondents, but of the communications now before me, there is such a uniformity of sentiment in favour of the practice with calomel, and so nearly in the same terms declaring what has been given above, that I shall content myself with simply quoting a single passage from each of twelve correspondents, and alphabeted below:—

A. Calomel in the doses you mention has been given to a considerable extent; and, in my opinion, is a medicine deserving the highest praise.

B. Calomel administered according to your plan has been our sheet anchor.

C. In the stage of collapse calomel in small and frequently repeated doses is alone to be relied on.

D. A patient of mine took upwards of 400 grains, was saved, and had no soreness of the mouth.

E. We have tried every mode of treatment, and been obliged to abandon them for the calomel treatment.

F. The disease here has almost universally yielded to the calomel treatment by small and frequently repeated doses.

G. and H. We have found the calomel treatment most efficient in early stage of collapse, and when the patient had become pulseless.

I. Having seen a great deal of the cholera in 1832, and attended patients both alone and with you, I can speak in the strongest terms of the efficiency of the treatment in the stage of collapse.

K. I consider the want of success with many, by the calomel treatment, has arisen from the large doses of opium combined with it.

L. My success in the use of calomel in small doses convinces me that all who shall give it a trial will be equally convinced of its value.

M. I beg to forward you the case enclosed, as proving the power of the calomel treatment to cure the disease in its worst form.

With the foregoing extracts I shall now conclude, with the single remark that those who may object to the treatment of the cholera by calomel, on the ground that they do not understand the mode of its action, should with equal reason reject the use of quinine in intermittents, for of the mode by which that medicine acts nothing whatever is known. It is strictly an empirical remedy, yet it is nevertheless an invaluable one, and it is therefore ardently to be hoped that the testimony of so many unbiassed witnesses to the value of the treatment will not be thrown away, and that the profession of these kingdoms, in imitation of their brethren in the United States, will give it a fair trial, feeling assured, as I do, that having, like their American brethren, given it such trial, they will, like them, never desire to abandon it.—*Lancet, Oct.* 1, 1853, *p.* 321.

157.—*Treatment by Large Doses of Calomel.*

[Mr. F. W. Richardson, of Woolwich, Surgeon to the Royal Kent Infirmary, in a letter to the editor of the 'Lancet,' observes:]—A person is affected with cholera because he has a specific poison in his blood, just as others are liable to measles, scarlet fever, small-pox, typhus, &c., because they have other poisonous matters in the circulating fluid. The materies morbi produces an altered condition of the blood, attended with great prostration of strength, vomiting and purging of a serous fluid, containing soluble salines, some albumen, epithelial scales, and perhaps fibrin, and the blood thus inspissated causes congestion of the Malpighian capillaries of the kidney, with suppression of the urine, which, together with the other retained secretions, still further damage the blood.

The treatment consists in eliminating from the blood the morbid materials which are interfering with its normal condition. "There are reasons for believing that mercury occasions in the blood that dissolution of certain materials which is preliminary to their excretion;"* and coincidently with this change, produces increased activity in the secreting functions of the liver, the kidneys, the glandulæ of the intestinal canal, &c. We must, therefore, trust to *calomel in large doses*, uncombined with any other drug, to restore the secretions, and cure the patient. I am now speaking of collapse. Give an emetic, composed of fifteen grains of sulphate of zinc, and fifteen grains of ipecacuanha, and repeat it in ten minutes. In about twenty minutes, place twenty or thirty grains of calomel on the tongue, and repeat from two to ten grains, or more, every ten, twenty, or thirty minutes, according to the severity of the symptoms. Support the vital powers by beef-tea injections, administered every half-hour or hour. Allay the thirst and vomiting by ice or a *tea-spoonful* of very cold water, given *ad libitum*. Cautiously avoid all stimulants, for they have been shown to create positive mischief, and most alarming symptoms during the reaction. When the dejections again contain bile, continue small doses of calomel for a short time, and then give twenty grains of rhubarb, thirty grains of sulphate of potash, in some peppermint-water, or a castor-oil draught. Afterwards prescribe liq. am. acet. every four hours, or some carbonate of soda and tartaric acid in a state of effervescence. Then restore the strength in the way previously mentioned.

The gentleman who has been most successful during the past in managing the cholera is Dr. Ayre, of Hull, who employs small doses of calomel, combined with a small quantity of opium. He remarks—"I have had seventy-six cases, of which sixty have been returned cured, five are under treatment, four of them are out of danger, and ten have died." Facts thus clearly prove that the calomel plan is the only rational and successful one; but I differ, however, from Dr. Ayre in several respects. I think emetics ought to be given at the onset, for they restore warmth to the surface, relieve the congestion of the internal organs, and shorten the attack. Again, it is acknowledged how necessary it is to support the vital powers, and it is on this principle that brandy is used; but beef-tea is the remedy, and as it cannot be administered by the mouth, it must be by the rectum. When the calomel is employed in *large doses*, the patient recovers more quickly, and the mortality is not so great. All severe cases of collapse under my care have recovered in *from twenty-four to forty-eight hours*. Dr. Ayre says, "the average duration of the disease in those who recovered under his treatment has not been more than *from four to five days*." He also talks of "the greater or less occasion for the subsequent employ-

* Mr. Simon, 'Lancet,' vol. ii. 1850, p. 198.

ment of leeching and the antiphlogistic remedies." I have never seen any necessity for such remedies, except when opium, brandy, chalk, &c., have been given.

I will add a few words concerning the premonitory symptoms. In my experience *painless* diarrhœa is extremely rare. The symptoms are purging, nausea, retching, sometimes vomiting; *foul and coated tongue;* pain at the stomach; often cramps in the abdomen and legs; and frequently coldness of the extremities. I would seriously ask any sensible, reflective person, if "twenty grains of opiate confection, mixed with peppermint water, or weak brandy-and-water, and *repeated every three or four hours, or oftener,*" is "plain advice," or ought to be administered under such circumstances? I have had many cases of this kind under my care lately, and they all invariably and instantly yielded to emetics, ten grains of calomel placed on the tongue, followed in an hour's time by a rhubarb draught, which can be repeated as often as may be deemed requisite. It must not be forgotten, that it is a specific poison, often combined with putrescent organic matters, received into the blood, which occasions all the symptoms, and the quicker they are metamorphosed and discharged from the system the better.

In the epidemic diarrhœa of infants, I have found grain doses of calomel, given every two or four hours, perfectly effectual in curing the complaint. In infantile cholera, I give emetics, two grains of calomel every ten minutes, and beef-tea injections, as often as necessary.—*Lancet, Oct.* 8, 1853, *p.* 353.

158.—*Treatment by Calomel, Counter-irritation, Astringents, &c.*

[Mr. C. A. Chavasse, of Smithwick, Birmingham, has had an extensive experience of this disease both at home and abroad. Speaking of the treatment, he observes:]—I have seen every plan tried,—counter-irritation, brandy and laudanum, brandy and capsicum, cold affusion, transfusion; Stevens' saline with soda, chloride of sodium, and chloride of potash; the Australian sulphuric plan, mustard emetics, salt emetics, calomel and opium, opium and astringents, acetate of lead inclusive, calomel in large doses of one drachm every hour, and small doses of one grain every quarter of an hour, and many others too numerous to mention; some certainly with partial success, but all infinitely inferior in efficacy to the plan I am about to recommend, and which I first saw put in practice in India on a very large scale.

I have seen many hundred cases treated successfully by it; and several times forty or fifty successively. The proportion of recoveries to deaths was, I believe, about eight of the former to one of the latter; and to show the great malignancy of the disease before it was adopted, nearly all the cases died, often in two or three hours. Without further preface, I earnestly recommend the following:—

Warm turpentine epithegms, or mustard-poultices applied to the abdomen frequently. Take of calomel, prepared chalk, of each ten grains—make a powder—to be taken every hour in treacle, with half an ounce of the following mixture:—Take of compound powder of chalk with opium, powdered acacia, white sugar, of each, two drachms; sesquicarbonate of ammonia, one drachm and a half; cajeput oil, twenty minims; tincture catechu, three drachms; camphor mixture, eight ounces: mix. The above to be given until the evacuations become feculent—generally from twelve, sixteen, or twenty doses—and then the following substituted until the purging be quite stopped. Take of acetate of lead, half a drachm; strong acetic acid, half a drachm; Battley's sedative solution of opium, fourteen minims to one drachm; oil of cinnamon, four minims; tincture of ginger, three drachms; infusion quassia, to eight ounces: mix. An ounce to be given every two hours. Afterwards, decoction of bark, with dilute sulphuric acid, may be given. It is of the greatest importance that the calomel be of the *lightest* description, and triturated for a *long time* with the chalk.

The strength of the patient must be supported by giving, alternately, strong beef-tea spiced with pepper-corns and seasoned with salt, and arrow-root and milk with brandy and nutmeg between each dose of the medicine.

Cold water may be allowed ad libitum.

Flannel should be worn next the skin.—*Lancet, Oct.* 8, 1853, *p.* 355.

159.—*Treatment by Sulphur.*

[Mr. John Grove, of Wandsworth, believes the antidote and remedy against cholera to be sulphur. This belief, he says, has been tested by Mr. Blacklock in

India, Dr. Bird in America, himself in England, and by the peasantry in Scotland. He does not say it is an infallible remedy, but he believes it to be of equal value to quinine in ague, or mercury in syphilis. He says:]—The value of a remedy depends much on the manner in which it is administered. The plan I have adopted is the following:—A mixture of twenty grains of sulphur (the pure precipitated), twenty grains of sesquicarbonate of soda, two drachms of compound spirits of lavender, and water sufficient to make up six ounces: a fourth part of this is given every two or three hours in ordinary diarrhœa, and it very rarely fails to cure at once if hot fluids and vegetables are discarded from the diet. If the disease has advanced to vomiting, the dose is repeated every quarter of an hour until the medicine is retained on the stomach, which generally happens after the second or third dose; the intervals are then prolonged according to circumstances. The same rule is observed when the spasmodic form of the disease occurs, and with equally favourable results. When diarrhœa has preceded the treatment for some days, I have found it useful to add five minims of tincture of opium, or sometimes ten, to each dose of the sulphur mixture, in order that the sulphur may be retained and absorbed, upon which I believe success to depend.—*Lancet, Sept.* 3, 1853, *p.* 304.

160.—*Treatment by Sulphuric Acid.*

[Dr. H. W. Fuller, Assistant Physician to St. George's Hospital, observes that it was not until September, 1851, that he had an opportunity of testing the efficacy of the newly introduced remedy, sulphuric acid. He says:]—In that month, two most urgent cases of choleraic diarrhœa, attended by extreme collapse, violent and incessant cramp, pinched features, rice-stool evacuations, and matters resembling chicken broth rejected from the stomach, were admitted about the same time into St. George's Hospital. Had these cases occurred in the autumn of '49, they would have been designated cases of Asiatic cholera; they differed in no respect from genuine cholera, and were entitled cases of choleraic diarrhœa simply because cholera was not then prevalent as an epidemic. In both these instances I administered sulphuric acid with complete success; and as the action of the remedy could be attested by pupils and others, who witnessed the success of the treatment, I published in the 'Medical Times and Gazette' (January 10, 1852) a detailed account of the effects observed, together with the general result of my experience. It amounted to this—that the dilute sulphuric acid of the pharmacopœia, administered in half-drachm doses, repeated at short intervals, has a powerful and immediate influence over the disease. The vomiting and purging cease, and the cramps subside, sometimes after the second, more usually after the third or fourth, dose of the medicine. The attack may leave the patient weak, and usually does so, in proportion to its severity, and the length of time which has elapsed before the administration of the remedy is commenced; but, within three or four hours, the disease is arrested, and convalescence follows speedily. Indeed, in ordinary cases, the change is effected with such marvellous rapidity, that he who in the morning is utterly prostrate, in the evening experiences little ill effect from his fearful seizure.

I had hoped that this circumstantial report, backed as it was by the result of my own experience, extending at that time to twenty-seven cases, and as it has since been by the concurrent testimony of several practitioners in different parts of the country, would have led to a recognition of the extreme value of this treatment in all instances of choleraic diarrhœa, if not of cholera; at all events it seemed but fair to presume that testimony so decided, in favour of a remedy so cheap, so harmless, so extremely simple, so uniformly successful, and producing its successful and striking results within so short a time of its administration, would at least have insured a trial of its virtues. But, unfortunately, the profession clings so rigidly to routine, that comparatively few have been induced to employ it, and thus its virtue as an anti-cholera specific remains almost unknown or disregarded. To give large and repeated doses of calomel, or opium, or cajeput oil, or chalk, or brandy, to employ saline injections into the veins, to wrap the patient in bran or mustard poultices, or to have recourse to one or all of the many expedients which are often resorted to in severe cases, has certainly a much more imposing effect, and is a proceeding more strictly "selon la règle," than the simple administration of sulphuric acid; yet, when it becomes known that the latter mode of treatment, albeit simple and unpresuming, effects its purpose perfectly, sometimes within one hour, usually within two, and al-

ways, I believe, within four hours; whereas the former, even when successful (and that it is often unsuccessful the Registrar General's Reports sufficiently attest), requires many hours for the accomplishment of the same object, and leaves the patient in a state requiring as many days for recovery, it cannot be much longer a question as to which method of treatment shall be adopted. This is a matter in which, if the profession will not act, the public will certainly take the initiative. If once it becomes known that a halfpenny-worth of acid is more than sufficient to effect a cure—that the acid, when properly diluted with water, is so harmless, that it is not unfrequently drunk as a lemonade during the hot weather in the south of Italy, and, throughout the Continental states, is served out in accordance with a police regulation, as a daily beverage to all persons engaged in the manufacture of white-lead, it will not be long before a bottle of the dilute sulphuric acid of the pharmacopœia is duly installed in every housewife's medicine cupboard. The profession have yet time to take the matter into their own hands; but, if they do not soon avail themselves of their privilege, the public will assuredly step in, and deprive them of the opportunity.

My own conviction is, that in sulphuric acid we have an antidote—a specific—against choleraic diarrhœa, if not against the worst forms of cholera, as powerful, as energetic, and as certain in its effect, as is cinchona bark, or quina, against a paroxysm of ague. In bilious diarrhœa, and in certain chronic diarrhœas, it is of little or no avail; and, in some, though in very few, according to my experience, it gives rise to pinching pain in the abdomen; but in epidemic diarrhœa, in acute autumnal diarrhœa, if I may so term it, and in more decided choleraic diarrhœa, I have known no single instance of its failure; indeed, the more choleraic the diarrhœa, the more speedily are its curative effects produced. This fact will appear of greater value when it is known that I have notes of its administration in above ninety such cases, many of which have occurred among my own patients at the hospital or elsewhere, and some in the practice of my friends.

With this, however, even more than with the other remedies, success depends upon the mode of administration. Given at intervals of three or four hours, it fails in exerting any curative influence in severe cases, and is seldom of much avail even in milder cases; and to insure its beneficial effects, it should be exhibited in full doses, repeated at much shorter intervals. When I first began to give it, I ordered two doses to be taken within the first hour, and a dose to be repeated every hour afterwards. But recent and more extended experience, together with the close and eager observation of its influence on my own person, has convinced me that, even in ordinary cases, twenty minutes form a sufficient interval between each dose. In severe cases, five or six doses may be given with advantage within the hour; and should any dose be rejected by the stomach, another should be administered at once.* Rarely, however, is any dose rejected except the first, and the rejection of that is by no means common. While loathing the sight of other liquids, the patient, after he has tasted the first dose of the medicine, very generally craves for its repetition, and drinks it with avidity.

As the stomach is very irritable, and the acid taken in simple water is, under the circumstances, extremely palatable, I never mix it with syrup or other matters; and I strongly suspect the warm aromatic spices, with which some of my friends have flavoured it, are additions by no means agreeable to the patient. Unfortunately I have had some personal experience in this matter, and so strongly was my distaste to the medicine excited by such flavourings, that for the future, whenever I am the patient, I shall certainly put my veto upon them.

The effects produced by this remedy are very remarkable. Sometimes, after the second dose, more commonly after the third, and almost always after the fourth,

* Mr. Buxton, of Great George-street, Westminster, to whom the profession is greatly indebted for having been the first to call attention to the anti-choleraic properties of sulphuric acid, recommends the administration of half-drachm doses every quarter of an hour in severe cases. If those gentlemen who make trial of the remedy so strongly recommended by Mr. Buxton would use it as they ought, in the manner and in the dose he directs, and administer it only in proper cases, we should seldom, if ever, hear of its failing to arrest the course of the disease. In every instance within my own knowledge in which it has failed in its efficacy, the blame has been chargeable upon those who have administered it, rather than upon any want of virtue in the remedy itself. They have either given it in insufficient doses, or else in cases of bilious diarrhœa, with foul breath and loaded bowels, which would have been benefited by a brisk purge of calomel and rhubarb.

dose of the medicine, the patient experiences a grateful sense of warmth at the epigastrium; heat returns to the extremities; the nausea and vomiting immediately cease, even if they have not been arrested already; the purging is stayed, the cramps subside, and the countenance re-assumes its natural appearance. Very generally, perspiration breaks out, and the patient goes to sleep, and awakes refreshed, though feeling somewhat weak. The other symptoms betoken a like amendment. The tongue, which before was dry and furred or shrivelled, becomes moist and but slightly coated; the evacuations from the bowels assume a healthy colour, and are accompanied by an unusual discharge of bile; and the pulse regains its normal steadiness.

Such being the case, it is unnecessary, in mild or ordinary instances, to have recourse to any further treatment. With due precaution as to over-exercise and fatigue, and strict attention to the amount and nature of the diet during the next few days, so as to allow the stomach to recover its wonted energy before its powers are again fully taxed, the patient usually recovers without let or hindrance. The bowels act regularly without the assistance of medicine, and the dejections are of a healthy colour and consistence. But in severe cases, if care be not taken to maintain the good effects already produced, a relapse may occur, or recovery may prove tardy. The patient, though no longer troubled with diarrhœa, may digest imperfectly, and suffer greatly from nausea. For some time after these severe attacks, the secretion of bile takes place irregularly, and the bowels become costive or irritable, and the motions dark-coloured and offensive. Hence it is sometimes expedient to follow the sulphuric acid by two or three grains of blue pill, or a grain of calomel, administered at bed-time for a few successive nights, taking care during the day to impart tone to the stomach by the exhibition of some light bitter infusion, combined with potash and ammonia, small doses of tincture of rhubarb, and, if necessary, a little chalk. By some such means as these, all unpleasant after symptoms are prevented, and the patient proceeds steadily to convalescence.

On several occasions, it has occurred to me to try whether the same effects might not be produced by continuing the administration of sulphuric acid at intervals of six or eight hours. But the result of the experiment has not been encouraging. In some few instances the patient has improved steadily, but occasionally he has experienced a relapse, and has generally been longer arriving at perfect health than under the plan already indicated. Hence, as soon as the urgent symptoms have been subdued—*i.e.*, after the first few hours—I usually discontinue the acid, and, if necessary, have recourse to the treatment above recommended as most conducive to the maintenance of its good effects.

For some time after a severe attack, strict attention to the diet is of the utmost importance. The food should be light and nutritious, taken in smaller quantity than usual, and at regular intervals. As a general rule, everything which is "bilious" disagrees with the stomach; but perhaps nothing produces derangement more certainly than malt liquor. I have tried every kind of beer, both in bottle and on draught, on myself and my patients, and almost uniformly with bad results. Excellent as bitter ale proves as a stomachic under ordinary circumstances, it usually produces a strange commotion after one of these attacks. No beverage should be employed except water, accompanied by a due allowance of wine, or, if necessary, a little brandy. Fruit and vegetables should be altogether avoided.—*Medical Times and Gazette, Oct.* 1, 1853, *p.* 344.

161.—*Treatment by Bicarbonate of Soda and Opium, called "Maxwell's Remedy."*

[Dr. Cameron, 37th Regiment, writing to the 'Medical Times and Gazette,' states that Dr. Maxwell, of the Madras Cavalry, used to prescribe a mixture of bicarbonate of soda and opium in cases of this kind. It obtained such a notoriety that it was termed "Maxwell's remedy." Dr. Cameron was led to use the form from the remarkable effects it produced in a case very nearly approaching to true cholera.]—The proportions are as follows:—A scruple of sesquicarbonate of soda, with three grains of opium, given in the form of bolus, and washed down with a second scruple of soda in a wineglassful of water *as hot as the patient can bear to swallow it.* This to be repeated in the evening, with two grains of opium if necessary, and afterwards in diminished doses if required. I have never found it necessary to give a second bolus when the first was retained, and sometimes have succeeded in stopping the

vomiting by the hot draught with laudanum when the patient could not keep down any bolus. This was the case in the cholera patient alluded to, who was admitted at Colombo, on the 15th of July, with blue skin, shrivelled hands, and weak voice, after vomiting and purging all night.

On our arrival here, and during the hot weather with cold nights in March, we had about a dozen cases of men brought into hospital, many of them off guard, in a state of great exhaustion from vomiting and purging, having generally had diarrhœa for twenty-four hours or more previously. None of them were exactly cases of cholera, but they very closely approximated to it, having cramps and great coldness of skin. In every instance, "Maxwell's dose" was immediately given and acted like a charm.—*Med. Times and Gazette, Oct.* 8, 1853, *p.* 365.

162.—*Treatment by Quinine, &c.*

[The EDITOR OF THE 'MEDICAL TIMES AND GAZETTE' observes that the lesson we may learn from the experience of the past, is not to persevere in modes of treatment which have proved useless. He remarks:]—Of all the remedies used during the previous epidemics, with the exception, perhaps, of opium as a palliative in certain stages, quinine probably is most deserving of a further trial. Modern experience in India is leading to increasing confidence in its powers. Towards the close of the epidemic of 1849, it was used in London. Mr. Spencer Wells injected a solution into the veins in four cases. Dr. Parkes did so in two others. He also injected solution of salicine without any marked effect, besides alcohol, both in simple warm water and in saline solutions. The experiments were only made in desperate cases, and no recoveries followed, but the power and duration of the reaction which took place were very remarkable, and, as phlebitis only followed in one case, encouragement is afforded for a repetition of the trials in cases not so absolutely hopeless as those in which they were formerly made.—*Med. Times and Gazette, Oct.* 8 1853, *p.* 376.

163.—*Treatment by Saline Injections.*

[DR. G. OWEN REES, F.R.S., observes on this method of treatment:]—As the cholera has again visited this country, I venture to direct the attention of the profession to a point of considerable importance as respects the application of one of the remedies for the disease. With the view of recovering some of the worst cases, and when other remedial means have been unsuccessfully tried, practitioners have occasionally injected saline fluids into the veins. As this proceeding has been attended with great advantage in several recorded cases, and has produced in nearly all a temporary good effect, it has appeared to me that had the injected fluids been composed in more strict accordance with the chemical and physical constitution of the blood than was the case, we might have obtained advantages from the injections very far exceeding those we have on record.

With regard to the chemical constitution of the fluid, it would appear that we can scarcely venture to interfere with the organic constituents of the blood, nor imitate the animal extractives and protein compounds of the circulating fluid, in order to supply them if deficient. There is, however, no occasion for this in Asiatic cholera, for the evacuations from the intestinal surface, which destroy the healthy characters of the blood in that disease, appear to contain but little organic matter, being chiefly made up of water, holding the salts of the blood in solution. Thus Vogel and Wittstock agree in describing cholera motions as containing intestinal mucus, traces of albumen, and the ordinary salts of the blood, with carbonate of soda somewhat in excess. The analysis of cholera blood again points clearly to the necessity of supplying more especially salts and water, if we desire to restore it to the healthy standard.

With these facts before us, it is obvious that if we inject the veins at all, a solution of the salts of the blood is indicated in the case of Asiatic cholera; and it would seem well that those who may think it advisable to have occasional recourse to that plan of treatment for the recovery of severe and advanced cases, should keep a mixture of saline ingredients, combined in the proportions (or as nearly so as possible) observed in healthy blood. In order to answer the above requirements, I would recommend the following powder to be prepared, and kept ready for solution:—

Chloride of sodium, three ounces; phosphate of soda, one ounce; carbonate of soda, one ounce and a half; sulphate of soda, half an ounce.

As regards the physical peculiarities of the fluid for injection, it is quite as important that its characters in this respect should be attended to as that its chemical constitution should bear its proper relations to the blood. The specific gravity and temperature of the injection will require to be carefully adjusted before we can expect to put our patient under the conditions most favourable for recovery when mixing it with the blood. With regard to temperature, but little need be said; 98° Fahr. is necessary, as being that of healthy blood; and I would only remark, that it should be determined by a correct thermometer, and not by one of those cheap instruments with which the market is just now unfortunately inundated. The specific gravity should be adjusted by gradually diluting a strong solution of the saline mixture above described with small portions of distilled water, at the temperature of from 58° to 63° Fahr., occasionally testing it with a saccharometer (the ordinary instrument used in the examination of urine), until the instrument indicates a specific gravity of 1030. This being attained, the fluid has merely to be brought to the temperature of 98° Fahr. to fit it for use.

It is not my intention to enter, on this occasion, upon the reasons why it is so absolutely necessary to attend to the specific gravity of the injected fluid, further than to state that I have adopted that of the serum of the healthy blood, which has a specific gravity such as acts on the blood corpuscles by producing a gradual endosmosis, and thus avoids the evil effects which solutions varying much from the same weight inflict on those bodies.

In conclusion, I would beg to refer those who may be interested in this question of the effects produced on the blood by solutions of varying specific gravity, to a paper by Mr. Samuel Lane and myself, contained in the thirteenth number of the 'Guy's Hospital Reports,' and also to remarks having reference to the physical structure of the blood, contained in the second edition of my work on the Blood and Urine.—*Lancet*, *Oct.* 1, 1853, *p.* 313.

164.—*Treatment by Enemata of Tincture of Catechu, &c.*

[Mr. A. J. J. CHITTY states that in 1847 the cholera broke out in the 37th regiment (about 1,100 strong), stationed at Colombo, in Ceylon. Mr. Chitty was one of the surgeons in attendance. The mortality was by no means equal to the general rule, being only about one death to four and three-quarter recoveries. Mr. Chitty believes this to be due to the peculiar treatment adopted. He says:]—On post-mortem examination of the fatal cases, we were struck with the uniformly turgid, erected, and prominent condition of the villi of the intestinal canal, and of its glandular system generally; and there were frequent incipient ulcerations of Peyer's patches and the solitary glands,—in cases, however, rapidly fatal. It appeared to us that we required some medicament that would exercise a powerful astringent effect on these villi, extended throughout their location. Strong decoction of catechu seemed to offer this provision, and on that our successful treatment mainly depended. Enemata to the amount of two washhandbasinfuls were administered continuously, after a first or second trial with smaller quantities, until abdominal distension obliged us to desist from its injection; and in more than one instance was it in part evacuated by the mouth, proving that it had traversed the intestinal canal. Laudanum, turpentine, ether, ammonia, &c., were severally conjoined, according to the circumstances of each case, and the condition of the patient. The decoction was taken too by the mouth with laudanum; indeed it was required that all soldiers affected with the least diarrhœa were to be brought to the hospital to be placed under surveillance, and to commence the catechu. Its value was so esteemed, that many of the officers, as well as men, would come daily to request the nauseous draught as a preventive of the epidemic. The various systems of treating cholera recommended by different authors had a fair trial at our hands,—salines, calomel, creosote, cajeput, &c. (excepting the acid sulphuric oil, which did not at the time strike us as an appropriate remedy),—but were all laid aside for catechu in the urgent stages of the disease. The action of sulphuric acid I believe is in the main similar to catechu, inasmuch as its chief property and value in cholera would depend on its astringent action in the capillaries; but to effect this it must enter the circulation, and whereas at this juncture digestion and absorption are almost effectually interrupted, the exosmotic princi-

ples being in the ascendant, it would seem to yield a precedency to the external topical astringent, catechu. I never saw calomel of the slightest benefit, nor can I imagine upon what deductions it is administered in the urgent stage of cholera with a hope of being useful.

The intense burning pain felt in the epigastrium, and the vomiting I have observed, are best relieved by spirits of turpentine applied as hot as can be borne to the stomach, and iced drinks, especially champagne, which, too, has the advantage of being a less powerful stimulant than brandy. The administration of stimulants in excess in this disease I have found fraught with danger; it excites or restores too rapidly the force of the circulation, and thus allows a continued or more copious exudation of the serum of the blood; it is invariably followed by increased vomiting or purging. The inhalation of ether was tried at Colombo at this period, to relieve the muscular spasm, with questionable success; but in some instances its administration was followed by a remarkable and happy restoration of cuticular warmth, increased force and fulness of the pulse, sleep, and convalescence. Chloroform was unknown to us, and our inhaling apparatus (a truly military one!) almost worthless, or I could have written more confidently of the value of the anæsthetic.

I would also beg to mention that in one instance I was permitted to inject the venous system with a warm alkaline solution (sesquicarbonate of soda with warm water), by means of an anatomical injecting syringe. It was effected through the external malleolar vein, in a soldier already *in articulo mortis*, the pulsations of whose heart were only discernible by the stethoscope. In a few seconds the pulse returned to the wrist, the respiration became accelerated, warmth was restored to the surface of the body, and animation became so far perfected that the soldier rose up in bed and spoke, but instantly an excessive vomit occurred, and he fell back and died. I was not allowed to repeat the experiment; but I have since thought that had the injection been adopted earlier in the period of his existence,—had it been done a little more slowly, cautiously, and not so excessively (for I injected nearly a gallon), —the result might have been successful, and a valuable lesson gained. I am, however, so impressed with the force of that experiment, that on convenient opportunity, and friends permitting, I would not, as a *dernier ressort*, hesitate to repeat it.—*Lancet, Sept.* 24, 1853, *p.* 282.

165.—*Treatment by Chloroform Inhalation.*

[Mr. G. H. Heath, of Newcastle-on-Tyne, remarks that we sometimes meet with cases of cholera in which, although the symptoms are by no means malignant, yet the vomiting is excessive; and that chloroform inhalation is admirably adapted for such cases. In the following case the most obstinate vomiting had existed for twenty-four hours, and the patient was rapidly sinking into collapse.]—Without the slightest effect I tried successively hydrocyanic acid, chloroform in spirits of wine, —which have been much employed here,—morphia, and bismuth. I sat with him for some time watching him, and found that whatever was introduced into the stomach, whether medicine, food, or cold water, was instantly rejected; so that it was impossible that any drug given in the ordinary way could produce its effect. I then determined to try the inhalation of chloroform, after the following manner. First, I caused him to inhale a small quantity of the vapour, sufficient merely to quiet the stomach for the moment, without producing insensibility: he was then got to swallow half a grain of morphia, and immediately was put fully under the influence of chloroform, and kept so for a few minutes; when sensibility returned, he declared himself free from all feeling of sickness. He was then kept sufficiently under the influence of chloroform to prevent vomiting, for an hour and a quarter. When this time had elapsed, he became drowsy; the inhalation was discontinued; he slept for some time, and remained entirely free from sickness for twenty-four hours. Afterwards he had a slight return of vomiting, which was checked in the same way. He has now, except on one or two occasions, for several days continued free from vomiting, and appears likely to recover.

The principle of this mode of treatment is, to keep the stomach quiet by the inhalation of chloroform, until some powerful anti-emetic medicine has had time to affect the system; and from my experience of it, I should most strongly recommend *its adoption.—Lancet, Oct.* 15, 1853, *p.* 378.

166.—*Treatment by external Stimulants.*

[Mr. T. M. Greenhow says:]—It appears that in the most desperate cases, even when life has appeared extinct, the native Indians are accustomed to apply the actual cautery freely to the abdomen, not unfrequently with the happy result of restored vitality. The remedy, based on the same principle, which I have employed in three cases with complete success in the Borough Gaol of Newcastle, is precisely similar in kind, though somewhat less harsh and formidable in degree. A piece of linen dipped in brandy is placed over the epigastrium or abdomen and ignited; the brandy burns away in a minute or so, producing a considerable feeling of pain, which renders it necessary to secure the hands of the patient. Slight vesication will probably follow, and, if successful, in a short time heart and pulse begin to return, and the feelings of the patient are greatly improved; vomiting will also generally be put a stop to. It is probable that the application may soon require repetition, the situation being somewhat varied. In one case, now convalescent, in which death was apparently close at hand, the most complete effect was produced by a third application along the spine in the lumbar region.

Time will not permit me to give details of cases; but having now tried the *brandy blister* in seven or eight cases of total collapse, I repeat that in three it has been entirely successful, and in others has had the effect of temporarily rousing the patients; and if, as experience has since taught me, in some of these it had been repeated with more energy, greater success might possibly have resulted. The patients now convalescent say that it is a *severe* remedy; but are quite conscious of its beneficial effects, and attribute to its use, without any hesitation, their restoration from impending death.—*Lancet, Oct.* 1, 1853, *p.* 323.

167.—*Treatment by Cold Water Affusion or Douche.*

[Mr. E. M. Macpherson, late surgeon in the army, during nine years' service in India, had several opportunities of seeing the valuable effect of this treatment. He says:]—At Cawnpore, in June, 1845, cholera broke out in the 53rd regiment, to which I then belonged, with the same virulence as attended it in various localities throughout India during that and the succeeding year. Two men, the last survivors of several who had been attacked within two days, were sinking under that fatal collapse which alone, without any other symptoms, marked all the cases that had occurred in the regiment.

Every remedy that could be devised to produce reaction had been tried in vain; they might as well have been put into the patients' breeches pockets, or applied to the bed-post. The exhibition of the nitrous oxide gas was not only fruitless, but far from encouraging. The breathing under its use became more oppressed and hurried; there was no pulse, nor was it rendered perceptible by the gas; and as its continued exhibition distressed the patient, it was thrown aside as worse than useless. In despair at the utter want of the most trivial effect from the remedies employed, I made trial of the cold water affusion. I desired the water-carrier to pour water from his leathern bag over one of the patients. and, as the effect was good, then over the other patient, placed naked on a bedstead in the verandah. Attendants were at the same time employed in rubbing the limbs and trunk with their palms, and afterwards with dry towels. A refreshing sensation and comparative re-animation having followed each repetition of this operation, it was had recourse to at intervals, though only with the success of having prolonged life, which was ebbing fast for some hours.

This success, poor though it was, seemed to warrant the conclusion that, had the remedy been applied while somewhat more of life remained, recovery might have been the result. To test this conclusion by experiment, an opportunity was not long wanting.

On the same evening, as if by some fatal blast sweeping over the barracks, several men were suddenly struck down in a state of collapse. Some retained consciousness (*cholera asphyxia*); a few lost it, and were in a state of complete coma (*apoplexia*), with stertorous breathing; in three cases, attended with convulsions; others, especially towards morning, and during the two following days, were affected by vomiting, cramps, purging, with rice-water dejection, and the usual concomitants of cholera in Europe.

How many came under treatment at this time I cannot now venture to affirm;

but I believe I am correct in stating that, of all admitted, but two died—one of apoplexy; the other, who was allowed a warm bath, of cholera. The rest, all of whom recovered from the cholera, were treated by the cold water affusion.

Since the period above alluded to, I have not had an opportunity of treating cases of epidemic cholera. Several cases, however, of endemic cholera among Europeans, while it was, as often happens, epidemic among the natives, have been treated by me, in every instance with success.

One of the most remarkable of these endemic cases occurred at Meerut, in August, 1848. A corporal of the 9th Lancers, an atrabilious subject, was brought to hospital at four p.m., almost pulseless, having been purged during the morning, and having passed several rice-water dejections on admission into hospital. There were slight cramps, and occasional efforts to vomit. He was immediately placed in a hip-bath, and water was poured over him, while hospital attendants rubbed the limbs and trunk. This was continued until he became chilly, and shivered. He was then removed from the bath, dry rubbed, and placed in bed, much revived by the operation, as was shown by less oppression in breathing, and a more distinct pulse. After remaining in bed for about half an hour, he began to relapse; the pulse sank; vomiting, purging of rice-water, and cramps, returned. He was replaced in the bath with the same effect as before. Being again placed in bed, he again relapsed. The water was again had recourse to, and repeated at intervals as above, according to symptoms, until ten p.m., six hours after its first application. The respiration then became free, the pulse soft and distinct; the natural warmth was restored, and remained; and the patient slept until morning, when he awoke with a furred tongue, feeling weak and drowsy, but without that consecutive fever so often more fatal than the disease itself, and which has always seemed to me to follow most in those cases in which brandy, opium, ammonia, or other stimulants, have been freely administered.

Meagre and unsatisfactory as the above statements must appear, taken as evidence of the efficacy of the treatment advocated, yet, if the action of the remedy shall be thought to afford a satisfactory explanation of its curative effect, one case successfully treated in the manner prescribed will carry more weight than accurate details of numerous cases, treated by the unknown action of some occult remedy.

The first effect of cold water, poured over the head and chest in a small stream from a water ewer, held at a greater or less height by a person standing on a chair or raising his arm over the patient placed in a bath, while frictions are applied to the trunk and limbs, is to produce, as in cases of ordinary asphyxia, a convulsive gasp or forced inspiration, succeeded by two or three strokes of quickened respiration. With each gasp, as by a convulsive throe, the parietes of the thorax, before immovable, will be observed to expand, and the diaphragm will descend. Simultaneously with each effort of inspiration, the impeded circulation will be found to flow, the pulse to partake of the impulse, and the sluggish pupil to resume its wonted sensibility. These are the first and immediate effects of the water douche. When continued, they constitute reaction; and if this is maintained, the vital energy, even at its last ebb, the natural heat of the surface, and the colour of the skin will be restored. This is effected by the imbibition into the blood, through respiration, of atmospheric air taken in at each forced inspiration; the entire surface being at the same time stimulated by frictions to the limbs. It being evident, according to this view, that the stimulating effect of the cold water douche is to be attributed to its power of exciting the respiratory function to take oxygen into the system, it may be inquired how the experiment with the nitrous oxide gas, above alluded to, failed so signally. One essential condition to its action was wanting; viz. that expansion of the thorax for the reception of air into the lungs, upon which the effect of the water douche so much depends. Since I have become aware of this as an essential condition in the effect produced by the water douche, I have not had an opportunity of repeating it in conjunction with the gas; but may it not be presumed that, taken together, if they do not prove an antidote to the disease, they are, at least, worthy of a trial? That the want of oxygen in the blood is the cause of cholera, has often been advanced, if not generally admitted; but the effect of this want upon the brain in producing vital depression seems to have been overlooked; whilst its effect, or that of some poisonous miasm in the system, upon almost every other organ of

the body, has been fully insisted upon as indicative of some particular line of treatment to be pursued.

The mode of applying the cold water douche merely consists in placing the patient in any convenient position, so that, while water is being poured over him, frictions may be applied to the limbs. After the gasping has ceased, this process is to be continued until the depressing effect of cold, shivering, and chattering sets in, when the pulse will begin to fall. The patient is then to be placed in bed, having been well rubbed. In a short time, when warmth begins to return, relapse will take place. The water is to be repeated in the same manner as above, and persevered in so often as collapse returns. After each repetition, its effect will be found to be more palpable and more prolonged; until at length, through the agency of the imbibed oxygen, the system is restored to its wonted power.

Many have mentioned, in a general way, the good effect of cold water in cholera; but none, I think, have understood the reason of this good effect, and, therefore, it has not been carried to its full extent.

It may be well to add, for the satisfaction of those who cling to the idea that cholera is a disease of vomiting, purging, and cramps, that under the water treatment, as described, these symptoms will soon cease to be objects of attention. They will, in general, subside on the first application, and seldom reappear after the third or fourth.

As to internal remedies, water to drink freely will be found the most agreeable to the patient's taste, less productive of nausea and depression, and not so prone to give rise to the often fatal consecutive fever.

As to the premonitory diarrhœa, on which much stress is laid, I would remark that in the worst cases of cholera it neither precedes nor accompanies the disease; that often, where it subsides, cholera sets in; that where it continues, cholera does not necessarily follow; that it is not part and parcel of the disease; that to view it as such, and to treat it accordingly, can only be in accordance with that style of medical reasoning which has ever puzzled the profoundest lawyers.—*Association Med. Journal, Aug.* 26, 1853, *p.* 754.

ADDENDA.

168.—ON THE MODE OF DEATH FROM THE INHALATION OF CHLOROFORM.

By E. R. Bickersteth, Esq., Liverpool.

[There can be no question that unless proper precautions are used during its administration, chloroform is a powerful and poisonous drug. Mr. Bickersteth has performed many experiments illustrating its effects, and he says:]

From these experiments the following conclusions may be derived:—

1st, That, in death from the inhalation of chloroform, the respiratory movements cease before the cardiac.

2nd, That the heart continues its action, uninfluenced by the chloroform, for a period longer or shorter after the cessation of respiration, and that its then failing may be considered as a natural consequence of the respiration having ceased, and as independent of the influence of chloroform.

3rd, That if after the respiration has ceased, and while the heart is still in action, chloroform continues to be absorbed into the system, its movements may become impaired or cease—the chloroform in such case acting directly upon the heart.

4th, That if artificial respiration be resorted to before the cardiac contractions are seriously affected, and be properly maintained for a sufficient period, the respiratory function may be re-established.

It remains now to show that these principles are applicable to the human subject; and to do this, I shall narrate some cases that have occurred under my own observation, in which artificial respiration was the means of restoring the natural respiratory efforts when life appeared to have been all but gone.

Case 1. A boy was cut for stone by my friend Mr. Hakes, on the 29th of March, 1849. Chloroform was administered on a piece of sponge, and the full anæsthetic effect produced, before proceeding to tie him up in the ordinary position: the inhalation was continued, without any regard to his condition, until the operation had been completed—altogether about five minutes from the time he became insensible. It was noticed that during the operation scarce a drop of blood escaped. When it was over, the child was found to all appearance dead—the muscles were flaccid; the surface of the body pale; the respiration had ceased; the pulse could not be felt; the heart sounds were not audible (but the room was by no means quiet); the eyes were half open; the jaw dropped; the pupils dilated; and the corneæ without their natural brilliancy. Several means were tried to resuscitate him, but without effect. At length artificial respiration was commenced—the air escaped with a cooing sound, as if from a dead body. After continuing it for a while, the breathing commenced, at first very slowly and feebly. Soon it improved. In two hours the child had quite recovered.

Case 2. In December, 1851, a child a few months old was put under the influence of chloroform, for the purpose of having a nævus removed from the right cheek. As soon as insensibility was produced, the operation commenced—the handkerchief containing the chloroform remaining over the face, as some difficulty had been experienced in keeping up the anæsthetic effect. Suddenly the breathing ceased; the muscles became flaccid; the countenance pale and collapsed; and the lips of a purple colour. Artificial respiration was employed, and in less than a minute the breathing returned, and the child was restored.

Case 3. On the 6th of March, 1852, I had occasion to remove the finger of a robust, healthy looking young man in the Royal Infirmary. He was already under the influence of chloroform when I entered the room, and as there had been some difficulty in producing complete anæsthesia, and the last of the chloroform in the bottle was already on the handkerchief, it was thought advisable by my friend in charge of its administration to keep up the inhalation, in order to produce a coma sufficiently profound to last until the completion of the operation: It was therefore left over his face, and I commenced and removed the finger, slowly disarticulating it from the metacarpal bone. I distinctly recollect hearing the man breathing quickly and shortly, and I also remember, that when just about to look for the vessels, my

attention was attracted to his condition by not any longer hearing the respiration. The handkerchief was still on his face. I took it off, and found, to my consternation, that the breathing had ceased; the face was livid; the eyes suffused, the pupils dilated; the mouth half open. He was to all appearance dead; still the pulse could be distinguished as a small, hardly perceptible thread, beating slowly. Immediately artificial respiration was commenced. For a minute or two his condition did not alter in any respect—then the lividity of the countenance increased, the pulse was no longer perceptible, and the sounds of the heart could not be satisfactorily heard. The words of the gentleman who put his ear to the chest, and who was well practised in auscultation, were, "I cannot be certain." During the whole of this time, artificial respiration had been diligently employed, but still the air appeared to enter the chest very imperfectly. I despaired. I felt certain the man was dead, and that no human aid could restore him; and if it had not been that those standing near me had urged me to persevere, I believe I should then have deserted the case as hopeless. Just at this time it occurred to me to put my finger in the mouth and draw forward the tongue, in order to secure there being no impediment to the air entering the lungs. Retaining it in this position, we again began the artificial respiration, and found that then the chest was fully expanded with each inflation. After keeping it up for a minute or two, the gentleman who had all along kept his hand on the pulse, exclaimed, to our delight, that he could again feel it—"It was just like a slight flutter that reached the uppermost of his four fingers," all of them being placed over the course of the artery. It gradually became more distinct and firmer, and at the same time, the lividity of the face decidedly lessened. In another minute the man made a slight inspiratory effort. I ceased directly the artificial respiration, and assisted merely the expiration by pressure upon the ribs. Another and another inspiration followed, and in a short time he breathed freely without assistance. The countenance became natural, and he appeared as if in a sound sleep. In half an hour he spoke when roused; then he vomited, and complained of giddiness. In an hour afterwards he had recovered sufficintly to walk home.

Moments of intense anxiety appear much longer than they really are; but even allowing this, I am quite sure that, at the very least, five minutes elapsed from the time when the man ceased breathing before the first inspiratory effort took place, and that for not less than one minute the pulse was imperceptible, and the heart's action almost, if not altogether, inaudible.

Case 4. A few weeks after the occurrence just described, I was assisting Mr. Syme in removing the breast of a lady. A gentleman, my superior in the hospital, was conducting the inhalation of chloroform. Anæsthesia was complete, and the breathing good, when the operation commenced. The chloroform was allowed to remain over the face during the whole time of its performance. Before it was over, I noticed the respiration become very quick and incomplete, and suggested, in consequence, the propriety of removing the handkerchief. My remark was neglected for eight or ten seconds, and then, just as it was taken away, the breathing ceased suddenly. The face became deadly pale; the eyes vacant; the lips livid. Instant dissolution appeared inevitable (the pulse was not felt). Artificial respiration was immediately commenced, but the air not entering the lungs freely, the tongue was pulled forwards and retained so with the artery forceps. The chest then expanded freely with each inflation, the air escaping with a cooing sound. In rather less than a minute the respiratory movements recommenced, but at first so slowly and imperfectly that it was necessary to assist expiration. When recovery was a little more established, the operation was completed. Before the putting in of the sutures, sensation had partially returned, and in a short time the lady had perfectly recovered.

I would here direct attention to the expediency of *drawing forward the tongue*, in all cases when it is found necessary to resort to artificial respiration. When the patient is lying on the back, so soon as the breathing ceases and the jaw drops, the tongue is particularly liable to fall backwards and close the orifice of the glottis. Artificial respiration, under such circumstances, is worse than useless. It is better at once to pull the tongue well out of the mouth, and passing a hook through the tip, confide it to the care of an assistant. I am convinced that in some of the cases in which artificial respiration has failed, it has been from the neglect or too tardy adoption of this very simple means. Time of the utmost value has been lost in the

absurd attempt to restore animation, by applying stimulants to the nostrils, or pouring cordials into the mouth, without even a thought that the first can have little or no effect after the respiration has ceased, or that the second would as likely pass into the trachea and bronchi, as into the stomach.

There can be no doubt, that in the foregoing cases, a grievous error was committed by continuing the inhalation after anæsthesia was produced, and that it was in consequence of this the accidents, so nearly fatal, occurred. After anæsthesia has been induced, the object for which chloroform is given is already accomplished, and there can be no use whatever for its further administration. It is very easy and safe to maintain complete anæsthesia for hours together, by occasionally giving a few inhalations of the vapour when there are signs of approaching return of sensation; but to continue the inhalation without interruption after anæsthesia is fairly established, is most certainly very dangerous, and will, sooner or later, varying according to age and constitution, prove fatal. Anæsthesia, or paralysis of the nerves of sensation, is but one of a series of changes produced upon the system by chloroform. Paralysis of the respiratory system is the next and follows quickly afterward, and if yet more be taken up, the nerves also of the organic system cease to perform their functions, and the heart in consequence is paralysed. It is thus only in death that the influence of chloroform ceases. Let it be especially remarked, how precisely analogous the symptoms in the foregoing cases were to those observed in animals under similar circumstances. The respiration ceased for a considerable period before the pulse, and artificial respiration being employed, the pulse returned before the respiration was re-established.

The pulse should not be taken as any guide during the administration of chloroform. It should be wholly disregarded, except under certain circumstances, when syncope is to be feared from loss of blood, during the performance of capital operations. The pulse is only affected secondarily in consequence of the failure of the respiration. It therefore follows that our attention should be mainly directed to the latter, while the former may be altogether neglected, or at any rate considered as only of secondary importance. By carefully watching the pulse, the attention must in a measure be taken away from the respiration, and exactly to such a degree, it is productive of evil; for, in order to guard against mishaps, and at the same time conduct the inhalation with confidence, the breathing must be observed with the greatest care and attention. But when it is thus asserted, that death always commences in the organs of respiration, and that the heart only ceases to act in consequence of the lungs having previously failed in the performance of their functions, I would wish to be understood. In the first place, I should be sorry to deny the existence of individuals with such peculiar nervous idiosyncrasy, that the converse of this (the ordinary rule) might obtain. With such an example however I have never met, nor have I ever encountered a single occurrence that would lead me to suppose the heart peculiarly or rather primarily susceptible. In the second place, it must be remembered that if, after respiration has ceased, chloroform in any considerable quantity be absorbed into the system, it will act directly upon the heart and speedily stop its contractions. And thus, if with the last inspiration a sufficient quantity of the pure vapour is inhaled, the movements of the heart will cease almost immediately, and so it might appear that the respiration and cardiac contractions have stopped simultaneously, although in fact a brief interval has existed, an interval, in short, long enough to permit of the absorption of the chloroform taken into the lungs with the last inspiration.—*Monthly Journal of Med. Science, Sept.* 1853, *p.* 211.

169.—*Case of Suspended Animation under Chloroform; Artificial Respiration; Recovery.* By Edward William Lowe, Esq., late House Surgeon to St. Bartholomew's Hospital.—[In this case the patient was a young man, aged 22. The operation about to be performed was partial excision of the left elbow-joint. He seemed in all respects a proper subject for the administration of chloroform. Mr. Lowe continues:]

Dr. Scott, who has so frequently administered the chloroform, did so on the present occasion. The man was rather restive, but nevertheless took it moderately well, and, having been rendered insensible, I had proceeded with the operation almost

to its completion, when the patient became suddenly deadly pale and cold, his pulse intermitting alarmingly, and his breathing becoming convulsive. His face was quickly bathed with cold water, and fresh air admitted freely to him; he, however, grew still worse, his respirations became more feeble, and his pulse could no longer be felt at the wrist. He was instantly laid on the floor, and the feeble action of the chest gently aided by the hands; in spite of this, in about a minute or so from his first seizure, he gave two or three short respirations, and, with a convulsive struggle, ceased to breathe, and his jaw dropped. As he did so, quick as thought, we bent over him, and Dr. Scott, closing the mouth, inflated the lungs by the nose, first covered with a cambric handkerchief, while I, with a hand on each side of the chest, gently emptied them; thus we continued for full four minutes without producing any sensible result; at last a gentleman who held the wrist exclaimed, "There is a beat!" and after the lapse of a few seconds, "There is another!" Then a third. Now it began to beat violently, and the chest to heave deeply, but with a short period between each action. Presently the pulse beat more slowly, quietly, and regularly, but more feebly, and the chest acted spontaneously. After the lapse of a few more minutes, the man opened his eyes and smiled; being asked, he said he could swallow,—so, ceasing all aids to his respiration, he was given a little brandy; but not a drop was given until he declared he could swallow. He was now sensible, his respiration restored, and his pulse acting naturally, though feebly; yet he still remained of a deathly coldness, and it required no little trouble to make him warm; his own expression well explained his condition, "He was as cold as if he were dead;" and, indeed, he was so. Brandy inside, blankets and hot water bottles outside, did, after a time, manage to restore him to something like a natural state of heat, and shortly afterwards he was able to sit up, and, in a little while, to be sent in a carriage home.

He has, since this, continued to go on quite well, never having felt any uncomfortableness, excepting a slight occasional tightness at the chest (which is often experienced after chloroform), and even now he is quite ignorant of his narrow escape.

I am fully persuaded that this case is a convincing testimony in favour of a steady perseverance in artificial respiration, as a remedy for the fatal effects of chloroform. To M. Ricord we owe its first recommendation and adoption. There can, I believe, be no doubt of its superiority over every other plan; but to make it effective it must be done well, and steadily persevered in. The present case tells well in favour of perseverance. Four minutes is a long time, under such circumstances, to continue steadily one plan without obtaining any benefit, and yet it triumphed in the end, and, to complete our victory, we had to continue the artificial respiration for full eight minutes without cessation. Our reward was success; and I cannot but believe the same reward awaits every one, who, under similar circumstances, will steadily pursue the same treatment.—*Med. Times and Gazette, Aug.* 13, 1853, *p.* 174.

170.—ON THE ARSENICAL TREATMENT OF CASES OF SNAKE-BITE.

By Benjamin Travers, Jun., Esq., F.R.S.

This subject has always been one of especial interest to me, in consequence of the great probability that we possess in arsenic a remedy which, if administered boldly and in time, will rescue the sufferer from an imminent and painful death. I believe no one has ever questioned the accuracy of the facts recorded of the comparatively certain operation of the Tanjore pill, and Mr. Ireland's cases, of which he enumerates five treated with unvarying success, are powerfully corroborative of Dr. Russell's statements. Mr. Ireland, on his arrival in the island of St. Lucie, having previously heard the facts concerning the efficacy of arsenic stated in Mr. Chevalier's lectures, proceeded at once to test the truth of the proposition, by administering one grain doses of the mineral (in the form of arsenite of potash, as it exists in Fowler's solution), every half hour until the patient began to revive. He treated five cases with perfect success in this manner. The men severally took six, seven, and eight doses of the following form, before the irritating operation of the arsenic began to show itself by vomiting and purging. What is very remarkable, is the immediate and complete recovery of these patients, without the arsenic having produced any

trace of its poisonous agency, or any subsequent ill consequences. Mr. Ireland prescribes as follows:—

℞. Liquor arsenicalis 3ij.; tincturæ opii gtt. x.; aquæ menthæ pip. ℥iss.; to which was added half an ounce of lime-juice: the medicine being taken in a state of slight effervescence. The embrocations and clysters mentioned by him, cannot be regarded as having had much to do with the cure, but were no doubt useful in some degree. On one occasion only did Mr. Ireland amputate the finger on account of the extent of the laceration. In the remaining instances he contented himself with paring the edges of the wound and dressing it superficially.

It is well admitted by most physicians that arsenic will cure chorea, if given in proper doses and for a sufficient time. Mr. Martin, of Reigate, and Mr. Salter, of Poole, have adduced abundant evidence of the great powers of arsenic in the cure of this disorder. Now, having a due regard to the condition of the nervous system in these two instances of its disturbance from such different causes, I think we must conclude that arsenic operates specifically and powerfully in that direction. Dr. Taylor tells us that it is not a corrosive poison, and although four or five grains have been found sufficient to destroy life, patients have recovered after taking sixty. Such a case is upon record; it was published by Dr. Roget. A grain of arsenic every half hour sounds somewhat heroical, but I should like to see this remedy tried in hydrophobia as Mr. Ireland used it to quell the effects of the snake poison. I think it may be shown that arsenic powerfully and specifically stimulates the semilunar ganglion and its tributaries presiding over the organic life of our bodies. Its "evacuant" operation is an incident of prime importance in cases of poison. It should always be given on these occasions until the patient vomits and purges abundantly.—*Association Med. Journal, Sept.* 16, 1853, *p.* 812.

171.—ON GALLIC ACID IN THE TREATMENT OF PURPURA HÆMORRHAGICA.

By T. P. J. Grantham, Esq., Burgh-le-Marsh, Lincolnshire.

[Gallic acid has long been known to be a valuable remedy in passive hemorrhages. The following cases show its value in purpura.]

Case 1. Mr. E., a farmer and miller, aged 60 years, came under treatment on the 18th November, 1852. Two days previously, he had noticed a soreness of the tongue, and perceived that the saliva was bloody. The symptoms of purpura were well marked. The gums were spongy, and they bled freely. The tongue and the buccal mucous membrane were dotted with purple fungoid excrescences, some of which were as large as split peas, and from them blood oozed. The breath was offensive, and the appetite was impaired. The urine contained a considerable quantity of blood. Petechiæ were scattered over the thoracic and dorsal regions; and there was a large ecchymosis on one arm, and another on one of the thighs. The gallic acid was administered in five-grain doses every three hours, and two compound rhubarb pills were given at bedtime. On the 20th, the purple excrescences had shrunken and ceased to bleed; the petechiæ and ecchymosis had faded; and the urine was free from blood. On the 30th, the improvement had been sustained. He was quite well again. He said that the first dose of medicine seemed to do him good. Only four scruples were taken.

Case 2. This was a more serious case, several days having elapsed from the first setting in of hemorrhage from the nose before the patient came under my care. Master C., aged 16 years, a draper's apprentice, was seen by me on the 21st June, 1853. He was greatly exhausted and blanched from epistaxis, hæmoptysis, melæna, hematuria, petechiæ, and ecchymosis. He was immediately ordered to take gallic acid in doses of three grains every three hours, and subsequently in five-grain doses every two hours. The pil. rhei. comp. was given as an aperient. The treatment was followed by most marked benefit, and before a week had elapsed, all hemorrhage had ceased. On the 5th July, a slight recurrence of epistaxis happened, owing to his having too soon resumed active exercise. But the bleeding was quickly checked by a few doses of the acid, and complete convalescence speedily followed.

Case 3. H. B., aged twelve years, son of an agricultural labourer, after three

weeks' illness from typhus then prevalent in the village where he resided, was seized on the 16th August, 1853, with hemorrhage from the nose, gums, and bowels. The tongue was dotted with purple spots, and the back sprinkled with numerous small petechiæ. The treatment adopted was the same as in the former cases. On the 17th, hematuria was superadded to the other symptoms, which were very severe. On the 18th, the hemorrhages began to abate. On the 20th, the spots on the tongue and the petechiæ had faded; the hemorrhages had nearly stayed. On the 21st, a severe return of epistaxis occurred, from picking his nose. This was followed by alarming prostration of strength. He was ordered to take the acid every hour, and to have his nose plugged. On the 22nd, all bleeding had ceased. On the 30th, I found that there had been steady and daily improvement since last report. On the 31st, he was convalescent.

This was a severe case, as the patient's strength had been so much reduced by a previous exhausting disease, and accordingly it was necessary to push the acid to a considerable extent.—*Association Medical Journal, September* 9, 1853, *p.* 793.

172.—*Turpentine in the Treatment of Purpura.* By Wm. Smith, Esq., Chesterfield.—[Mr. Smith's attention was led to the use of this remedy from the mention of it in Dr. Copland's Dictionary. In a case he relates, the patient being a child six years old, purpura first appeared on the lower extremities, in the autumn of 1852, though no medical advice was sought until the spring of the present year. He says:]

In the case now narrated, the child had for some time lived chiefly on animal food, in fact, on the usual farm-house diet—bacon. On my first examination of her, March 15th, 1853, several very large ecchymoses were present on the legs, and one of the size of an egg on the forehead, the result of a slight blow. The smallest pressure produced them. There had been considerable bleeding from the nose on several occasions, and once from the bowels. There was oozing of blood from the gums. The urine was high coloured, and the alvine evacuations pale and generally constipated. I treated this case first with purgatives, and then with diluted sulphuric acid. She was also ordered to suck oranges, drink lemonade or weak beer, and to eat rhubarb tarts.

The case did not progress with this treatment; the epistaxis was, indeed, somewhat diminished, but the other symptoms continued much the same.

Under these circumstances I gave the child citrate of iron combined with citric acid. This succeeded better, and after three months' perseverance, cutaneous discolorations ceased. The progress of cure was, however, extremely slow, and a relapse has since occurred, but the patient has again recovered under the use of the citrate of iron.

The second case occurred in a little girl, aged 4, generally strong and active, and residing in a spacious house situated near a tannery. This case was very acute. There was first remarked in her a disinclination to food, especially vegetable, and extreme irritability of temper. The bowels were extremely constipated. These symptoms ushered in the attack. The lower extremities became weary and stiff towards evening, and three large elevated spots, varying from the size of a fourpenny piece to that of half-a-crown, appeared upon them. These spots became rapidly purple and soft, and gave the impression to the touch of fluid blood under the skin. In the morning they became yellow, and gradually were absorbed, but others, larger and higher up the legs, succeeded. Two formed of a very large size in the hams, and the skin became so thin that I thought it would give way. The child, in three days, became pallid and exsanguine, and her pulse very sharp and hemorrhagic. After using a mercurial purge, I at once resorted to the following mixture:

℞. Olei terebinth. ʒss.; olei ricini ʒj.; mucilaginis, sacchari, āā, q. s.; olei caryophyl. gtt. iv.; aquæ dist. ad ʒviij. Misce ut fiat mistura, cujus sumat cochlearia ij. vel iij. bis vel ter in die.

The effect of this mixture was most satisfactory. The purpuric spots rapidly disappeared, the bowels acted copiously and naturally, the appetite of the child became good, and the temper cheerful.

I certainly believe that in all passive hemorrhages, turpentine will be found most valuable in its effects; and in this class of diseases we must generally place purpura.—*Association Med. Journal, Sept.* 9, 1853, *p.* 792.

173.—*Lupulin (the Alkaloid of Hops) as an Anaphrodisiac.*—M. Debout, of Paris, editor of the 'Bulletin de Thérapeutique,' has found lupulin extremely useful in chordee, priapism, traumatic orgasm, and spermatorrhœa. The lupulin should be used in powder, and triturated with lump sugar. The dose is from fifteen to thirty grains. M. Ricord and M. Puche have carried the dose from one to three drachms without any unpleasant effect.—*Lancet, July* 2, 1853, *p.* 8.

174.—*Administration of Ether in Capsules.*—In the 'Journal de Médecine et de Chirurgie Pratiques' for April, 1853, M. Clertan, of Dijon, states that he has for some time been accustomed to give ether in capsules in nervous affections. After several years of observation, by himself and others, he concludes that ether, when introduced in a known dose, pure, and without loss, into the stomach, has an effect which was totally unknown until the preparation of the ether pearls (*perles d'éther*). According to the old plan, the ether became partly volatilized before passing half way down the œsophagus; and what arrived in the stomach was dissolved in water, and in a state favourable to rapid and sudden volatilization. M. Clertan has several times seen neuralgia, hemicrania, and gastralgia, arrested instantaneously by from one to three of these capsules; while ether draughts, and ether in syrup, had been largely given without any effect.

The editor of the 'Union Médicale' for April 12th, in noticing M. Clertan's preparation, states that the ether capsules are already employed extensively by M. Trousseau, M. Pidoux, and other practitioners in Paris. The advantages of the capsules are:—

1. The ether can be administered in a known dose—each capsule containing four or five drops.
2. The capsules are inodorous; so that ether can, without their knowledge, be given to persons to whom its smell is repulsive.
3. The capsules permit neither evaporation nor decomposition of the ether; they may be kept a year at least, or indefinitely, according to M. Clertan.
4. The ether arrives in the stomach without irritating the membrane of the mouth or pharynx, or producing cough; and it produces its sedative action by its rapid absorption.—*Association Med. Journal, Sept.* 2, 1853, *p.* 779.

175.—*Stringfellow's Electro-Galvanic Pocket Battery, for Medical Purposes.*—This invention was cursorily mentioned in a report of the proceedings of a late meeting of the Medical and Chirurgical Society. The principal feature in which it differs from former contrivances consists in its being composed of a number of compound bars or plates, permanently arranged in series, one, two, or three of these forming a battery. One sufficiently large for personal use is composed of two of these series, or twenty-two bars, which will occasion a sensible shock; or, under continued application, is powerful enough to cauterize the skin. Its power can be so regulated as to supply an electric current of any less intensity that may be required; and the efficiency of these batteries is shown by the fact, that one consisting of six bars, excited by water alone, will decompose that fluid, and produce a mild continuous current through any part of the body. These batteries are also constructed of much higher power; the value of which, from their ready application in urgent cases, as well as for various scientific purposes, cannot fail to be appreciated by all persons interested in, or acquainted with, the numerous medical and other important uses to which electro-galvanism may be successfully applied.

The portability and neatness of this battery is one of its recommendations. We feel assured that where electricity has been found beneficial, this miniature galvanic

machine will prove of value. It is easily employed, and well adapted for the relief of nervous invalids.—*Lancet, July* 2, 1853, *p.* 9.

176.—*Removal of a Gold Ring from a Young Lady's Finger.*—[In a letter to the editor of the Lancet, Dr. Castle, of New York, thus describes a plan of removing a ring from the finger, after many others had been tried in vain. He says:]

I at once proceeded to the house of the patient, and found the young lady in a most deplorable state of mental agony, the doctor embarrassed, and the family in a high state of excitement. I procured some prepared chalk, filled in the ring, and covered all round the finger with the preparation, and succeeded in drying the abraded flesh; then with a narrow piece of soft linen I succeeded in polishing the ring, by drawing it frequently and gently round the ring between the swollen ridges of flesh. I then applied *quicksilver* to the whole surface of the gold. In the course of *three minutes*, by gentle pressure with the nippers, *the ring broke into four pieces*, to the relief of all parties.

In a similar manner (without the chalk) I extracted a small brass ring, which a child had (child-like) inserted into the cavity of its ear. The operation was more tedious and more painful, but equally successful.

The modus operandi of the mercury.—It at once permeates and amalgamates with the metals, with the exception of iron, steel, platina, and one or two others. It immediately crystallizes, and becomes as hard and as brittle as glass, and with the same ease can be broken.—*Lancet, Aug.* 6, 1853, *p.* 134.

[Dr. Newnham, in a note to the 'Lancet,' gives the following method: ℞ "Wind closely and tightly round the finger as far as the ring a piece of well-soaped twine; then, with the end of a needle or probe, force the end of the twine beneath the ring, and gradually unwind. The ring will come off with the twine."]—*Lancet, Aug* 20, 1853, *p.* 178.

177.—*On the Different Kinds of Whey.*—[We have heard so much lately of the cures performed by several kinds of whey, that the various receipts below may not be uninteresting.]

The following is a translation of the directions given in the 'Pharmacopœia Borussica' of 1829, for the preparation of five different kinds of whey:—

1. *Serum lactis dulce, Sweet whey.*—Take an ounce of the dried stomach of a calf, infuse with six fluid ounces of cold water for ten or twelve hours, add an ounce of this liquor to nine pounds of fresh cow's milk, warm gently, and after coagulation is effected, decant and strain the liquid.

2. *Serum lactis dulcificatum, Sweetened whey.*—Take three pounds of cow's milk, boil, and at the commencement of ebullition add one drachm of bitartrate of potash; when the coagulation is effected, and the whole has become cool, strain, and boil with a sufficient quantity of white of egg beaten up into a froth, until the albumen is coagulated; strain, and add as much prepared chalk (or shells) as is required to neutralize the acid, and filter.

3. *Serum lactis acidum, Sour whey.*—The former without addition of the chalk.

4. *Serum lactis aluminatum, Alum whey.*—5. *Serum lactis tamarindinatum, Tamarind whey.*—In these respectively a drachm of crude powdered alum, or one ounce of the pulp of tamarinds, is employed instead of the bitartrate of potash.

Other pharmacopœias direct the preparation of a variety of whey with vinegar, or with Rhenish wine; in the latter case the proportions are eight ounces of wine to three pounds of milk.—*Brit. and For. Med. Chir. Review, July*, 1853, *p.* 149.

178.—*On Ferruginous Collodion.* By M. Aran.—Having observed the utility of the salts of iron in erysipelas, M. Aran, to facilitate their application, combined them with collodion, forming a preparation which united the compressive and astringent effects. It consists of equal parts of collodion and Bestuchef's tincture (ethereal tincture of perchloride of iron). Spread on the skin, it forms a somewhat thinner pellicle than ordinary collodion, but it is much more supple and resisting, so that the

limb can be moved in any direction without the cracking which takes place when collodion alone is used. Its adhesion is also more prolonged.—*Bull. de Thérap.*, xxxv. 371.—*Brit. and For. Medico-Chirurgical Review. Jan.* 1853, *p.* 277.

179.—ON THE ANÆSTHETIC PROPERTIES OF THE LYCOPERDON PROTEUS, OR COMMON PUFF-BALL.

By Benjamin W. Richardson, Esq.

Mr. Richardson's attention was first directed to this subject from a friend mentioning to him that bees were sometimes stupefied with the smoke of this fungus before the contents of the hive were removed. They gradually recover from the insects bulk, and thus the cruel necessity was obviated of destroying them by the fumes of sulphur. He then commenced a series of experiments, illustrating its effect upon animals. He says:

My first experiment was made on the 29th of last March. A kitten was placed in a bell-shaped glass vessel, open at top and bottom. Smoke from a piece of the fungus ignited was allowed to rise pretty freely into the bell; but several interruptions occurred, so that thirty-five minutes elapsed before any positive effect took place. By that time, however, the creature was fairly narcotized. A cut in the ear produced no sign of pain. The breathing was reduced to eight respirations per minute, and the temperature of the body was lowered. From time to time, after removal from the bell, I counted the breathing and the heart-beat, and found them gradually increasing in number, and the body becoming warmer. The sleep, however, was profound; and, after a period of two hours, no sign of sensibility to pain could be elicited. I laid the animal down by the side of her mother, and in the morning found her skipping about as well as ever.

The second experiment was performed on a dog. It was placed in a box, in which it had sufficient room to turn round, and in which the atmospheric air could enter freely from the top. The smoke of the fungus was admitted through the bottom of the box, and the animal was fairly narcotized in a quarter of an hour. On removing it on to a table in the narcotized state, a deep puncture was made in the nose: blood of a bright red colour flowed freely, but no sign of pain was given. The symptoms that preceded the narcotism were those of intoxication: the animal turned round several times: power in the legs ceased: and it fell down at last on its side, insensible: the bowels acting involuntarily. For five minutes after the anæsthesia had come on, the respirations numbered forty-eight per minute: but the heart-sounds were steady, and comparatively slow; the first sound corresponding to each inspiration. The body was warm. Five minutes later, there was a convulsive fit; but the body was still insensible, and the pulse forty per minute. The pupil was dilated and fixed, but the head was drawn back when a light was brought near to the eye. Three minutes later, the animal was becoming conscious, and wagged its tail when spoken to, but showed no pain when pricked with a knife. At a quarter past nine it commenced to wince when pinched, and crawled about in a reeling manner. From this time, the recovery was rapid; and in ten minutes the creature seemed as well as though nothing had been done to it.

In a third experiment, at which Dr. Crisp was present, a dog was again the subject. There were the same symptoms of intoxication, but complete narcotism set in in six minutes. In this case, the narcotizing agent had been given more freely and steadily than in the previous cases. Eighteen minutes after removal from the box, the animal remained insensible to pain, but was conscious when spoken to. Blood drawn from the nose was of a bright red colour. The other symptoms were very similar to those described in the last experiment. Two minutes later, rallying commenced; and in twenty minutes the creature had quite recovered. We remarked, that the sensibility returned in the fore legs previous to returning in the hinder ones.

Finding that the impure fumes of the burning fungus were rather painful to breathe, as they produced some degree of irritation in the throat, and caused the eyes to water, I made them pass through a solution of caustic potash, previous to exposing the animal to their influence. This was easily done. The smoke, being produced in a large closed vessel, was forced by water-pressure through a Woulf

bottle containing a solution of caustic potash, and was received in an inverted glass bell. I thus obtained a perfectly clear gas, free from carbonic acid. A young cat was now placed under the bell; she became slightly convulsed in thirty seconds, and was profoundly narcotized in two minutes. The heart-beats were not much affected, and recovery took place in seven minutes after removal from the vessel.

This experiment was performed on the 13th of April; and on the following day I repeated the experiments, both with the impure and clarified vapour, in the presence of Dr. Willis and Dr. Cormack, with complete success.

Mr. Sampayo, a gentleman residing in Barnes, had a favourite dog, which was very old, was constantly troubled with cough, and had a large and painful tumour over the abdomen. As the owner of the dog wished to have this tumour removed, Dr. Willis thought there would be a good opportunity for trying the anæsthetic power of the fungus during an operation. He therefore kindly undertook to cut out the growth, if I chose to produce narcotism. I did so with the impure smoke of the fungus. The animal was narcotized in six minutes; and the operation, which occupied ten minutes, was done without the merest sign of pain until the last suture was being put in, when wincing took place. Neither the heart nor the respirations seemed much affected in this instance. The recovery was so rapid, that, in six minutes, it would have been impossible to tell, without previous knowledge of the fact, that the animal had been subjected either to narcotism or operation.

I need not occupy time in giving the details of several more similar experiments; I will, therefore, refer only to a few others, which are of special interest.

On several occasions I have given the narcotizing vapour in limited quantities, and for a long time. This dilution of the narcotic has been effected either by mixing the clarified fumes of the fungus with a large quantity of atmospheric air, or by using a preparation of the fungus, which has been deteriorated by charring it, as I think, and which is sold in the shops under the name of "prepared fungus for fumigating bees." In this diluted shape, the narcotic produces a modified class of symptoms. Narcotism is induced very slowly, the animal reeling for a long time, and seeming to be paralysed, without being altogether free from pain. Convulsions, too, and vomiting, are apt to come on, and the animals recover gradually, but surely. I experimented on three animals, in the presence of Dr. Snow, in which these results followed. One of the animals vomited; and in all the cases, the anæsthesia, though sufficiently marked, was not so perfect as in some other instances. By continuing the exhibition of the narcotic, however, we succeeded in destroying a rabbit. The symptoms which the very diluted fumes of the fungus produce in animals, are somewhat like the effects of tobacco in persons who are not accustomed to smoke, with the addition of more decided narcotism and insensibility. It is worthy of remark, that an animal can be made to tolerate this narcotic by inhaling it frequently. I have a dog on which I have experimented from the first. Originally, the creature would come under the influence of the narcotic in six minutes; she will now inhale it, in liberal proportions, for an hour, at the end of which time she is intoxicated, and vomits if she has had a meal previously; but she is quite conscious, answers to her name, and tries to walk; the sensibility of the body being absent altogether, and the limbs occasionally convulsed. It requires a space of half an hour for her to recover from this condition. I have noticed that young animals, whose respirations are quick, although rapidly narcotized by a large dose of the substance, resist the action of a diluted dose very obstinately. I have kept young kittens for more than an hour in the vapour, and, under its influence, rolling about in the most drunken manner, but not absolutely insensible; when, however, complete narcotism does set in, it continues for a long period.

It occurred to me to give the narcotic in connexion with oxygen gas: the fungus was therefore burned in oxygen, and the dense fumes produced were clarified by caustic potash, and were passed into the glass bell, together with some free oxygen. A young cat was placed under the bell: she became uneasy in thirty seconds, and was fairly narcotized in a minute and a half. On removing her from the glass, the respirations were forty-six per minute, and the insensibility of the body was perfect. She recovered in four minutes, and ran out of the room.

It was a matter of some importance to ascertain if the narcotic principle of the fumes of the fungus would be given up to any fluid substance through which they might be passed. Yesterday, therefore, the fumes arising from the burning fungus,

mixed with a large quantity of atmospheric air, were first driven through caustic potash, and then, in this diluted state, were passed through alcohol into a glass bell. A kitten placed under the bell soon became uneasy, at the end of an hour was taken out insensible, and recovered slowly.

I have intentionally destroyed a great many animals with the narcotic, in order to observe how it would produce death. The respirations fail in a gradual and progressive manner, until they cease altogether, and the breathing sounds are dry and loud. The pupil is usually dilated and fixed for several minutes previous to absolute death. The temperature of the body sinks slowly. The heart continues to beat quickly for some time after respiration has ceased. The blood is always red, and generally not readily coagulable; but in a cat which had breathed oxygen gas with the narcotic, it coagulated with great rapidity. The lungs are of a pale or pink colour, never congested, nor is there congestion of any other internal organ. The heart is empty of blood in most cases; and its contractions may be excited for long intervals of time. The respiratory muscles and the bowels may also be excited to motion for a long period after the body is laid open. In four kittens which I opened before respiration ceased, I saw the rhythmical action of the heart, and regular respiratory acts, for twenty-five minutes after the opening. The peristaltic action of the bowels remained for not less than forty minutes. In no case have I found the brain and spinal cord congested, or in any degree visibly affected. Cadaveric rigidity soon becomes very marked.

To sum up the results of these experiments: There is, it is evident, a principle in the fumes of the puff-ball capable of causing anæsthesia in animals. The physiological effects brought out by this anæsthetic are also very marked. In a liberal dose, it narcotizes rapidly and effectually, without unpleasant symptoms; and the narcotic effect soon passes off, leaving the animal in perfect health. In diluted doses, it produces intoxication and convulsions; is longer in causing anæsthesia; sometimes excites cough and vomiting, and leaves the animal for a long time stupid and unwell. When it is carried to the extreme, the respirations cease before the beat of the heart. Indeed, in observing animals under the influence of the narcotic, it is only necessary to watch the respiratory movements; if these remain, even though reduced to the lowest, the animal will certainly recover on removing it from the cause of the narcotism. In this respect the narcotic principle of the fungus resembles the Woorali poison.

Experiments with the fungus may be performed in various ways. If the impure smoke is to be used, it is only necessary to let it pass freely into a box, through a hole in the bottom. A large tin funnel fixed beneath the box in an inverted position will readily convey the smoke. The box having been filled with the smoke, the animal is placed in it, and the lid is laid lightly on. Narcotism will generally take place in eight or ten minutes, often sooner.

To clarify the fumes arising from the fungus, two small tin funnels are made to fit mouth to mouth, and the nozzle of one funnel is connected with a Wolff bottle containing a solution of caustic potash. Another tube, connected with the Wolff bottle, will convey the clarified fumes away. If, now, a piece of the fungus be placed in a burning state between the funnels, the smoke can either be drawn by the mouth from the exit tube of the bottle through the ordinary double valve apparatus for chloroform, or it can be driven over into a bell jar, by fixing the nozzle of a pair of bellows to the free end of the funnels, and blowing gently. The glass bell into which the vapour is received should be placed on a nicely fitting board, and the animal must be passed into the bell quickly, after it is charged with the narcotic vapour.

Some one, perhaps, will ask, What is the nature of the narcotic principle contained in the fumes of the fungus? Is it a product or an educt of combustion? On this subject I have no direct information. That several of the fungi do possess a narcotic principle, has long been known; but no analysis has as yet thrown much light on the subject. In some countries fungi are used for making intoxicating potions. Our very distinguished countryman, Dr. Alfred Taylor, in the second edition of his valuable 'Manual of Medical Jurisprudence,' thus remarks on the fungi:

"Most of the narcotic irritant poisons, just considered, owe their deleterious effects to the presence of an alkaloidal principle similar to morphia, and susceptible of *insulation by complex chemical processes*. There is, however, considerable difficulty

in extracting these alkaloids from the respective vegetables; and when extracted, the chemical differences among them, in respect to the action of tests, are so slight as to be scarcely appreciable, even in the hands of a practised analyst."

The few conclusions, then, which it is in my power to offer with regard to this subject, are very insignificant; and are derived more from physiological observation than from chemical inquiries. However, they had better be stated.

1st. The narcotic principle is given off freely during the combustion of the fungus; and, as it exists in the fumes produced, is highly volatile.

2nd. Combustion of the fungus in oxygen gas does not destroy the anæsthetic principle.

3rd. The anæsthetic principle is not quickly absorbed or destroyed, either by watef, alcohol, or strong alkaline solutions.—*Association Med. Journal, June* 3, 1853, *p.* 479.

180.—*Nickels' Elastic Plaster, &c.*—Mr. NICKELS, of Camberwell Green, has forwarded to us some specimens of a plaster of which he is the patentee. Its novelty consists in the extensibility, in one direction, of the material on which the plaster is spread, so that it is capable of being more accurately fitted to the parts on which it is applied than are the plasters in general use. The material varies in thickness to almost any required amount; and any kind of plaster may be spread on it. We consider Mr. Nickels' plaster an useful addition to our surgical armamentarium.—*Association Medical Journal, October* 7, 1853, *p.* 884.

181.—ON CRAMP AND SPASM.

By DR. P. J. MURPHY.

Cramp is a sudden, involuntary, complete, and painful contraction of a muscle. All the voluntary and some of the involuntary muscles are liable to these contractions. Spasm is the term usually employed when this painful affection seizes on an involuntary muscle; of the latter class the most common sufferers are the heart and uterus; the uterus can suffer spasm when enlarged only. It is questionable whether muscles of canals, or even those of the bladder, can suffer to such extent from spasmodic action as demands medical treatment.

The involuntary contraction of muscles may vary in degree, from the painless form of subsultus tendinum or chorea, to the excruciating tortures of tetanus or epidemic cholera. The remote causes are various and dissimilar—irritation of the spinal cord; of the medulla oblongata; of the peripheral extremity of a nerve, mechanical or pathological; disease within the cranium, or a poison, as ergot of rye, circulating through the vessels. Involuntary contractions, attended with insensibility, are termed convulsions. The observations here refer solely to what may be called local cramp or spasm, originating in, and restricted to one muscle, as observed in the gastrocnemius; in the uterus, as after-pains; and to that alarming spasm of the heart, angina pectoris.

Cause.—The immediate cause of local cramp would appear to be *a languid circulation in the veins which traverse the substance of a muscle.* This theory will explain why cramps attack most frequently the voluntary muscles furthest from the organ of circulation—the feet and legs; why they are more common in cold weather; why the principal sufferers are females, especially those with weak pulse, pale countenance, and chilly surface; and therefore why they are so seldom absent in chlorosis. It will also explain why the seizure is most usual in the horizontal position, when muscular action, so favourable to the circulation, has ceased. Nearly one half of the young, growing females, with a tendency to chlorosis, suffer from this annoying complaint; and it is remarkable, that although we have many cases where the cramps are limited to the muscles below the knee, we meet with none where the remark will apply to those above the knee. No inquiry being made about this symptom, it is seldom mentioned to the physician, and yet it is almost pathognomonic of an enfeebled action of the heart, from which the anemic headache springs. When this affection is complained of, whether in the aged or the young,

no matter of what sex, the necessity for chalybeates is indicated. Dr. Brady makes one proper exception—in cases of pregnant females; but the cause of their languid circulation is mechanical, and therefore not remediable by medicine. It may very naturally be asked, if a feeble and delicate constitution predisposes to cramp, why it is not an attendant on the last stages of diabetes, phthisis, and other exhausting diseases? Because those diseases produce hectic fever, and hectic is accompanied with a pulse so rapid as to be incompatible with a slow venous circulation. Nor does it supervene in debility after profuse hemorrhage; the rapid pulse of reaction and the half empty vessels affording a satisfactory explanation of its absence. The severest cramps we witness from arrest of circulation in the veins of muscles, are those which add so much to the horrors of epidemic cholera, for these cramps, although general, in an exact sense must be considered local, no muscle contracting until the blood in its own veins is arrested. It is an error to attribute the cramps of epidemic cholera to a poisonous quality of the disease; and the recollection that our own autumnal cholera is accompanied with similar cramps, should disabuse us of this mistake.

In neither form of cholera do cramps supervene, until the venous circulation through the muscles is almost impeded from the density of the blood, a natural consequence of the exudation of its serous portion. No person can doubt that in epidemic cholera the circulation is from this cause almost arrested; for on puncturing a vein, the blood trickles down slowly, thick and dark as tar. Fatal cases of Asiatic cholera, it is true, are recorded, where few or no evacuations took place, yet cramps, although not violent, were noticed. Such cases might favour the opinion that the cramps depended on the inhalation of a specific poison, did not the post-mortem examinations discover the exuded serum still in the intestinal tube, consequently the cramps were present, but less severe than where the exuded serum was too abundant to be retained in the intestines.

That there are poisons capable of coagulating the blood in its vessels, and that coagulation is attended with muscular contractions, cannot be denied. Dr. Pereira, in his last edition of 'Elements of Materia Medica,' quotes the 'Journal de Chimie Médicale,' to show the physiological effects of bromide of potassium. Thirteen grains, dissolved in water, and injected into the jugular vein of a dog, coagulated the blood, and caused convulsions and death in a few minutes. But the same medicine taken into the stomach in larger doses produced vomiting only. As a clinical fact in English cholera, it is interesting to observe how much sooner the cramps cease when the stomach does not reject fluids; for the veins are soon refilled, and thus the proportion between the crassamentum and serum is quickly restored. The so-called secondary fever of Asiatic cholera arises solely from congestion of the venous system generally, and this congestion is peculiar, the fault existing in the blood itself being too thick, from having parted with its serum, to be influenced by the action of the heart. Rigors, or rapid involuntary contractions of muscles, are seen after exposure to cold, at the commencement of most fevers, and in the first stage of ague; for the first stage of these diseases is characterized by the desertion of blood from the superficial to the deep-seated veins, and these rigors or contractions are salutary; for by compressing the deep veins, the blood is restored to the superficial vessels, causing the phenomena of reaction. In fevers there can be nothing more alarming than the absence or prolonged delay of rigors. When scarlatina threatens to be unfavourable within twenty-four or thirty-six hours from its invasion, there are no rigors, for the muscles seem to have lost this salutary contractile power. A cramp may therefore be regarded as a painful but useful action of a muscle to assist in the circulation of venous blood.

Angina Pectoris.—No person can witness a paroxysm of this disease in a fellow-creature without a feeling of sympathy. The pain is most acute, and the alarm and distress pitiable. It is admitted that angina is a spasm of the heart, but the cause of the spasm has been attributed to almost every disease to which the heart is liable—ossification of the coronary arteries, disease of the valves, hypertrophy of the ventricles, and fatty degeneration of its substance, and certainly it has co-existed with most of these diseases; but yet, on the other hand, almost every form of heart-disease is daily witnessed, yet happily unaccompanied with angina. There is, however, no well-authenticated report of angina in an uncomplicated case of adhesion of the pericardium, and it seems anatomically impossible. Simple ossification of an artery

is not a cause of cramp; there is no cramp attends Potts' mortification, for ossification rather cuts off the supply of blood, and therefore the veins must be more or less empty.

If we admit, and it scarcely can be denied, that the arrest of venous blood in a muscle is a cause of cramp, we have a very plausible explanation of the proximate cause of angina, and why it may arise from almost every disease of the heart, and yet be absent in diseases apparently similar, for it is only when there is an impediment in the circulation of the coronary veins that the phenomenon of angina is produced. Practitioners must have met a modified form of angina which occasionally attends severe cases of chlorosis, or when the circulation is languid from "relâchement du cœur." Sudden pain is felt after exertion in the cardiac region, and now and then attended with pain on the inside of the left arm. This pain is quite distinct from the neuralgia of the eighth or ninth intercostal nerve, so common in the hysterical female, and from which the male sex never suffers, while it is not exempt from this angina, especially if the action of the heart be depressed by excess in smoking tobacco.

Ergot of Rye coagulates the blood. After parturition, the veins and sinuses of the uterus being full of blood, while the circulation is more languid, coagulation easily takes place; hence the muscle contracts to expel the blood from its substance. It is an erroneous idea to imagine that the ergot has a *specific* action on the uterus. On the unimpregnated uterus it has no action. It has utterly failed me as an emmenagogue. Even if pregnancy be of three or four months' duration no perceptible action is manifested, for in a few such cases I have inadvertently prescribed it, deceived by the character and representations of the patient. That it has the power of coagulating the blood is shown by mortification of the parts most distant from the heart, being the effect when it has been taken for any length of time. It is surprising how strongly impressed medical men are with the idea that after-pains are occasioned solely by clots in the womb. Before the adoption of this opinion it should be asked how it is that the uterus which tolerated for nine months the gradually increasing bulk of the fœtus, could be thrown into spasms from the presence of a small quantity of blood. Hydatids and moles will form, and distend it to an immense size, and yet it will be passive under their irritation.

Many facts countenance the idea that the primary cause of parturition is the coagulation of the blood in the sinuses, which is necessarily followed by muscular contraction. Ergot of rye coagulates the blood, contraction follows; small-pox kills the fœtus, the circulation ceases, contraction follows; in epidemic cholera the liquor amnii is removed, death then follows, and contractions supervene. The unimpregnated uterus is not liable to spasm.

Dysmenorrhœa.—The anatomy of the unimpregnated uterus displays its muscular fibres in a complete state of contraction; the cavity is almost nominal, and therefore a spasm or cramp of this organ is impossible. Dysmenorrhœa is not spasm; the pain is continuous, and women describe the pain as quite dissimilar from that of labour. As in such cases the menstrual fluid escapes with difficulty, the pain is probably that of distension, owing to the os tincæ being narrowed. Dr. M'Intosh, of Edinburgh, relieved his patients by introducing a metallic sound, proving the correctness of his theory; and another proof is, that mothers are seldom if ever annoyed with this complaint, although previously to parturition they were monthly martyrs.

We hear frequent mention of spasms of the sphincters of the rectum and bladder and as their veins are very small the retardation of blood could not be the cause of these local cramps. But contraction is the normal state of a sphincter, and the contraction is so complete as to resist the escape either of urine or gas; closer contraction seems impossible, rendering the idea of spasm improbable. Since the discovery that the severe pain at the anal orifice when emptying the rectum depends on ulcers and fissures of that part, spasmodic stricture of the rectum is never heard of. Sphincters have no self-dilating power; they would therefore remain permanently contracted were it not for the mechanical action of the urine and fæces escaping.

The pain of cramp arises not from muscular contraction, but from the severe pressure on the nerves of sensation which traverse a muscle. Voluntary contraction is incapable of producing pain. Paraplegia and other diseases would furnish me

with more abundant proofs, but enough has been stated to let the correctness of these remarks be tested.—*Lancet, June* 4, 1853, *p.* 511.

182.—SANGUINEOUS EFFUSION RESEMBLING FUNGUS HEMATODES OF THE THIGH.

By W. Tiffin Iliff, Jun., Esq., Kensington.

Mr. J. M. Y., aged 50, a gentleman of spare frame, rather bilious temperament, of temperate habits, and generally in the enjoyment of good health, came under my care on the 5th of March, 1851, complaining of pain of a rheumatic character in the muscles of the upper and outer part of the right thigh. On the second visit, he directed attention to a swelling near the seat of pain; this, on uncovering the limb, was at once apparent, equal to about the half of a small apple in size and situated at the junction of the middle and lower thirds, almost in the centre, though rather towards the outer edge of the rectus; it was deep-seated, and to the touch much resembled an enlarged bursa; it was not very movable, rather tender, and the temperature over it slightly increased; no external discoloration, no enlargement of the veins. It was now ascertained that five or six months before, he had struck the thigh against the step of an omnibus in descending from the outside, and that pain and some degree of stiffness resulted, which had never entirely subsided. He took no notice of it, however, and has since slipped down once or twice, each time the right thigh receiving a blow. Rest, evaporating lotions, and occasional leeching were ordered, but they failed to arrest its increase; frequent spasmodic action of the muscles caused severe pain and discomfort, and his health seemed beginning to be affected.

On the 17th of March, Mr. Cock's opinion was sought, my father inclining to the idea that it might be sanguineous effusion, or a collection of matter; I rather feared the commencement of malignant disease. Mr. Cock, after careful examination, advised the continuance of the soothing plan, with complete rest, hoping that it might be an abscess. Weeks, however, passed, with no improvement, but instead, more pain and spasm, increase of the swelling in length and in size, especially on the outer side, a more elastic feel, and a dubious sensation of fluctuation.

About the middle of April, Mr. Cock again saw him, and as in one spot the coverings seemed thinner, an exploring trocar was introduced, through the canula of which there passed about a dessert-spoonful of clear, greenish yellow fluid, succeeded immediately by about the same quantity of pure arterial blood; the former fluid coagulated spontaneously at once. Both were carefully examined microscopically, and nothing abnormal detected. Some little relief to the extreme tension resulted for a time.

On the 29th, Sir B. Brodie was called in consultation with Mr. Cock. His prognosis was unfavourable. He, however, referred to two cases which had occurred to him, in which an obscure swelling of similar nature had been punctured, and serum followed, but in the end matter formed, and a small piece of dead bone proved to be the exciting cause. He suggested the extract of belladonna externally, and the hydriodate of potash internally; this latter did not agree after a short trial. The swelling now slowly made its way upwards and round the outer side of the thigh, the muscular tension and spasm increased, and our patient's health seemed materially influenced; but the superficial veins remained unaltered, and no glandular enlargement could be detected.

May 20. Mr. Lawrence was called in. His prognosis was also unfavourable; indeed, when my father suggested making an incision with a lancet or scalpel, Mr. Lawrence considered it too hazardous a course. Change of air at Brighton was now tried, to improve his health if possible. He returned (after three weeks' stay in June) very much worse, having suffered while there from bilious attacks, nausea, want of rest, &c. Mr. Lawrence, of Brighton, and his late lamented son, saw him frequently, and on one occasion punctured the swelling; grumous blood only followed, and their opinion of the nature of the case was that it was malignant disease.

Mr. Lawrence of London visited our patient again on July 4th. Mr. Y. was then *sallow, features* sunken, pulse feeble and irritable, appetite bad, frequent nausea and

retching; the tumour extended from about two inches and a half above the patella to the same distance from the trochanter major, occupying the outer side of the thigh, and was evidently making its way under it; it was somewhat elastic to the feel, and tender on pressure, but the muscular spasm had lessened. Mr. Lawrence now expressed his conviction that it was fungoid, and said that he could not recommend any operation, as he believed the disease reached nearly to the head of the femur. Three more weeks passed, and his family, clinging to hope against hope, wished to have one more opinion, and on July 23rd Mr. Fergusson was called in. After a long and careful examination of the limb, he pronounced it to be malignant disease arising from and in the bone, and as such a hopeless case. From this time our poor patient emaciated more and more, becoming quite helpless, until September 13th, when he died, conscious almost to the last, and having for a week or two previously taken, I may almost say, no nourishment at all.

On examination of the limb after death, it was found that the *causa mali* was deep seated, and surrounded in a measure by the attenuated and expanded vastus externus muscle, and that the contents consisted of about a pint and a half of thick dark blood, with a small portion of fibrine adherent to the inner side and lower part; the bone itself perfectly healthy, but at the back part the pressure had caused an absorption of a small piece of linea aspera, and some blood had crossed it posteriorly to the inner side of it. The muscular structure was healthy, and no lesion could be detected likely to have caused the hemorrhage. The body itself was not examined, and this is much to be regretted; but we had not anticipated the appearances found, and time prevented a longer investigation. The case therefore must necessarily be regarded as imperfect, as there is wanting evidence as to the condition of the viscera, and especially the liver. It is, however, not the less one of interest and moment as regards diagnosis, for though positively pronounced malignant, the muscular structure, bone, and the blood, examined microscopically, testified the contrary. As to the treatment, I will not attempt to discuss it; it was sanctioned by those whose opinions are indisputably entitled to our highest consideration. Could we have foreseen events in the early stage, an incision with a lancet perhaps might have allowed the escape of the then pent-up blood, and means might have been adopted to restrain its flow for the future, and restore the natural condition of the limb; and though there would seem to be indicated a hemorrhagic tendency,—as otherwise why should the effusion of blood continue in spite of the greater pressure?—yet, on the other hand, there was nothing to lead to a suspicion of it. During the last few weeks alone of his life, when debility and emaciation were extreme, there existed some slight exudation of blood from the mucous surfaces, but it was not more than might naturally be expected. As the record, then, of what I believe to be a very rare case, I leave it to the consideration of others. "*Tantum valeat.*" —*Lancet, Sept.* 10, 1853, *p.* 246.

183.—*Case of Impending Death from the Inhalation of Chloroform; Recovery by the direct Insufflation from Mouth to Mouth, according to M. Ricord's Method.*—M. Boinet has just published, in the 'Bulletin de Thérapeutique,' the case of a lady, 30 years of age, who inhaled chloroform to escape the pain of having the forceps applied. She was short and ill-proportioned, and it had been a question whether the natural term of gestation should be waited for, or whether premature labour should be induced. The former course was adopted, but the head became locked at the outlet of the pelvis. Before the forceps were used, a cambric handkerchief, upon which about two drachms of chloroform had been poured, was held at a short distance from the patient's nose. She was soon quite insensible, without experiencing any excitement; and as the operation was being prolonged, M. Boinet desired the husband to place the handkerchief again to the patient's mouth, as she was beginning to move about, and to utter faint cries. The traction was now renewed, and the child extracted; but the husband, being engrossed by the operation and the perilous situation of his wife, left the handkerchief upon her face, though he had been recommended to take it off immediately the patient was again insensible. Just as the child was being withdrawn, the assistant, who was watching the pulse, stated that it had stopped. The cord was quickly cut, the child removed, and the windows thrown wide open. The heart had ceased to beat, the most complete relaxation of the

frame existed, the pallor was extreme; in fact, all the characteristics of death had made their appearance. For five minutes, cold water, ammonia, slapping, &c., were used with the greatest solicitude, but in vain, and the patient was declared dead. M. Boinet thought, however, that he should not give up the case until he had tried the mouth to mouth insufflation. This mode of filling the lungs with air remained at first ineffectual, as the cheeks flapped back immediately the blowing ceased; bellows were also tried, but to no better purpose. And now, finally, as M. Boinet states, a few more direct insufflations were attempted; more to avoid the imputation of leaving the patient too soon, than from any hope of recovering her. These were then continued with great energy, while the assistant pressed the lower part of the thorax, to excite the diaphragm to action. At last the patient made an inspiration, which the author compares to the last gasp of a dying person; and he continued the insufflations without much hope of observing a second inspiration, as the pulse and heart were quite still. But in a few seconds a second breathing effort took place, and the patient gradually recovered, exactly as happens with those who wake from their narcotic sleep without having experienced any arrest of circulation. When the patient had quite recovered, the placenta was taken away, and she made a very good recovery. The question now arises whether this was a mere swoon, which would have been recovered from without any efforts at insufflation.—*Lancet, Sept.* 10, 1853, *p.* 248.

184.—*Phases of Dental Evolution.*—M. Hervieux read, at the Academy of Medicine, a note upon some circumstances connected with the phases of evolution of the teeth. The following are his conclusions respecting the order of appearance of the milk teeth:—

a. Inferior middle incisors.
b. Superior middle incisors.
c. Superior lateral incisors.
d. Inferior lateral incisors.
e. Canines.
f. Lesser molars.
g. Second molars.

The inferior middle incisors pierce the gum at from the 11th to 12th month; the superior middle, at from the 12th to 13th month; the lateral, about the end of the second year; thus, a child of two years should have all its incisors. The canines appear at from the 20th to 24th month; the first molars, at from the 20th to 26th month; the second molars, at from the 30th to 36th month. The evolution of the milk teeth, therefore, occupies the interval between the end of the first and of the third years. But these rules are not absolute, indeed the exceptions are very numerous.—*Med. Times and Gazette, Aug.* 6, *p.* 148.

185.—*Pityriasis Capitis.*—[Mr. J. Winzar, of Salisbury, in a note to the editor of the 'Lancet,' says:]—I have found a most efficacious remedy for this vexatious disease in the use of the following:—Take of fresh sulphuret of potash one drachm, of distilled water three ounces, mix and make a lotion, to be used daily.—*Lancet, Oct.* 8, 1853, *p.* 360.

186.—*On Distichiasis.*—The following mode of treating single hairs when inverted, by Mr. Wilde, of Dublin, is well worthy of attention:

"In such cases, placing the horn spatula within the lid, I make an incision with a small knife down to the root of the inverted lash; and, having waited till the hemorrhage has ceased, I apply a point of nitrate of silver by means of a *porte-caustique*, down to the bottom of the wound, and *then* remove the lash; it seldom fails, but frequently it destroys two or three of the neighbouring cilia."—*Association Med. Journal, March* 11, 1853, *p.* 207.

187.—*Soot as a Disinfectant.*—[Dr. Elliott, of Carlisle, says that the Local Board of Health of that city have adopted with success a suggestion of the Rev. Mr. Dew, of St. Cuthbert's church, viz., the immediate subsequent use, in the removal of *night-soil* and manure, of a few shovelfuls of soot.]—*Lancet, Oct.* 1, 1853, *p.* 325.

A SYNOPSIS,

CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE FOREGOING PAGES: SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR. (ARRANGED ALPHABETICALLY.)

AFFECTIONS OF THE SYSTEM GENERALLY.

FEVER, *Typhus.*—Out of eighteen cases treated by the administration of brandy, one only was fatal; in all the rest the plan pursued was remarkably successful. Half an ounce to an ounce of brandy was given every hour or every half-hour day and night, and a draught every second hour, containing sp. æth. chlorici, ℥x.; ammoniæ carbonatis, gr. v.; aquæ pur. ℥j. As much beef-tea was given as the patients could drink. The head was always shaved, and in most cases a blister was applied to the scalp. (Dr. R. B. Todd, p. 20.)

Yellow.—Quinine is a stimulant, and as depression would succeed the use of the quinine, the remedy should be continued through the case. Sometimes, by this remedy, we may cut short the disease at once, if the case is seen very early. To do this we may give 3 ss. of quinine and ℈j. of calomel directly, and a similar dose with five grains of James's powder an hour afterwards, followed in two hours by an ounce and a half of castor oil. This treatment will very often cure the disease at once. If it does not, and the disease progresses, twenty grains of quinine may be given for four doses. If deafness has commenced, we should wait until it has subsided. Then ten grains may be given every second hour, and continued according to the degree of headache, pain in the back, congestion, and muscular prostration. During convalescence, three grains may be given three times a day in wine. If the larger doses of quinine be vomited, a large mustard plaster should be applied to the epigastrium, and another dose given; and if vomiting again occurs, the process should be repeated. Occasionally, however, 3j. of sulphuric ether and eight or ten drops of creosote may be given to allay any spasm, and we may then wait an hour before again trying the quinine. (Dr. W. J. Cummins, p. 25.)

First clear out the bowels by a dose of calomel or blue pill with a solution of Epsom salts. Then give turpentine in doses of twenty minims three times a day; a little sweet nitre may be mixed with this remedy. If the dejections are bloody or vitiated, give along with the turpentine small doses of opium and castor oil. The auxiliaries are sinapisms and blisters to the epigastrium, emollient enemata, and during the stage of debility, wine negus, beef-tea, &c., and cinchona injections. The turpentine was tried in a very severe case of typhus with excellent effect, in the following form: Spirit of turpentine and spirit of nitric ether, of each three drachms, camphor mixture four drachms, compound tincture of lavender two drachms. A teaspoonful to be given in a wineglassful of water every four hours. (Mr. J. Laird, p. 28.)

RHEUMATISM.—One of the exceptional cases in which lemon-juice is of no avail, is that of a gonorrhœal character. A woman, aged 30, was admitted into Guy's hospital with rheumatism and a copious yellow discharge from the vagina. All ordinary remedies failed to relieve, until the purulent discharge had been removed by 3j. doses of cubebs. (Dr. G. O. Rees, p. 34.)

SCROFULA.—In the case of a boy, proteine, given in three-grain doses, three times a day, the dose being afterwards increased to five grains, produced the most remarkable effects—iron and other tonics having been previously given without any improvement. (Mr. J. Taylor, p. 38.)

AFFECTIONS OF THE NERVOUS SYSTEM.

CHOREA.—In a most severe case of this disease (the patient being a girl aged 16), in which the symptoms were particularly aggravated, the following treatment proved very successful. She was ordered to inhale chloroform, and to have a suppository containing two grains of opium, at once, and a draught with four grains of camphor and some chloric ether every two hours. Afterwards eight grains of quinine were ordered to be given as a suppository every hour for six times. The next day she was decidedly quieter, and the draughts and suppositories were given at intervals of four hours. From this time she rapidly improved, and in three weeks was discharged. (Dr. Wilson, p. 68.)

CONVULSIONS, *Epileptic.*—In the case of a child one year and seven months old, after all means of relief had been tried without effect, and the patient seemed sinking fast, it was determined to try chloroform internally. Five-minim doses were given after every fit. After the first dose, the child slept almost continuously. The remedy was ordered to be given three times a day, the dose being afterwards increased to seven minims, but the convulsions were never again repeated, and after the first dose of chloroform, the child rapidly improved. (Mr. H. Bowe, p. 62.)

EPILEPSY.—In two cases of this disease, the operation of tracheotomy was performed with the best results. It was found that the operation was best performed thus: The incisions were made in a transverse direction above the thyroid body, the muscular fibres being divided freely, and the trachea laid bare just below the cricoid cartilage. The main incision into the trachea was also made transversely, but from the middle of the lower edge a short downward incision was added. (Dr. J. C. Bucknill, p. 62.)

AFFECTIONS OF THE CIRCULATORY ORGANS.

ANEURISM.—M. Bonnet announces the complete cure of an aneurism of the subclavian artery by the application of chloride of zinc paste. The caustic penetrated by imbibition into the deeper part of the tumour, and produced complete coagulation of blood, which was detached without any hemorrhage. The eschar separates in about eight days after the application of the caustic, but by successive applications it may easily be retained for a month or longer, or the superficial portions may be removed by a bistoury. (M. Bonnet, p. 173.)

It has recently been attempted to cure aneurismal tumours by injecting into them a few drops of a concentrated solution of the perchloride of iron. Several cases have been recorded in which the operation was successful. (M. Pravaz, p. 171.)

ERECTILE TUMOUR *of the Orbit.*—The following mode of treatment was quite successful. A solution of lactate of iron (eight grains to one drachm of distilled water) was injected into the centre of the tumour. Violent pain in the head and vomiting succeeded, but these gradually disappeared, and the recovery was perfect. Dr. Brainard, the author of this paper, believes the injection of the perchloride of iron into the blood to be exceedingly dangerous, because it is a substance abnormal to the constitution of the blood, and because it produces instant coagulation. In the case of the lactate of iron, its components already exist in the blood, and its effects are not sudden coagulation, but a thickening of the coats with deposition of coagulable lymph from subacute inflammation being induced. (Dr. Brainard, p. 174.)

AFFECTIONS OF THE RESPIRATORY ORGANS.

APHONIA.—In cases of aphonia arising from chronic inflammation of the larynx and fauces, paint over the throat, externally, a strong alcoholic solution of iodine (℥j. to ʒj.). Where there is a thickened and mammillated state of the pharyngeal mucous membrane, a solution of silver, topically, is more preferable. (Dr. Bennett, p. 96.)

EMPHYSEMA PULMONUM.—This disease, in the majority of cases occurring in our large towns, in vitiated atmospheres, and where the patient has been insufficiently *nourished,* is a blood disease in its origin, and is of an asthenic character. It is

to be remedied by small doses of iron, quinine, and tonics, with a generous diet of animal food and porter. One grain each of sulphate of iron and of quinine may be given in infusion of roses with syrup of ginger. Dry cupping between the shoulders, the inhalation of creosote (twenty drops to a pint of boiling water) each night, a stramonium cigarette, or twelve drops of chloric ether, have all been used successfully for warding off an attack of nocturnal dyspnœa. A favourite remedy also is the fumes from a slip of lighted nitre touch-paper; and a case is mentioned where a large dose of the hydrochlorate of ammonia gave great relief. (Dr. G. Corfe, p. 90.)

Hooping Cough.—That the solution of nitrate of silver removes the excited state of the extremities of the branches of the par vagum, is proved by the fact that, after all inflammation has passed by and the hoop only remains, the topical treatment is by far the most effectual. The most convenient apparatus for the application of the solution, is, by the sponge and whalebone. The strength of the remedy should be regulated by the stage of the disease; the greater the degree of inflammation the weaker should be the solution, and its strength should be increased as the disease decreases. Perhaps we may say at first fifteen grains to the ounce; in other cases two scruples to the ounce may be used with advantage. The application should be renewed at least every second day. If the hoops are very violent, however, or the remedy has not been applied until the disease has reached its height, the applications should be more frequent. It may be noted that in all cases where it is necessary to introduce the sponge into the larynx, the finger should be introduced into the patient's mouth, so as to touch the tip of the epiglottis, along the surface of which the instrument may be glided down with certainty to reach the rima glottidis. (Dr. E. Watson, p. 94.)

In the case of a girl, 16 years old, afflicted with hooping cough, the inhalation of a little chloroform during the paroxysm in two days removed the hooping sound. The best way to use it in cases of children, is to drop about thirty drops in the palm of the hand, and hold it near enough to allow a due mixture of atmospheric air with the vapour. The best time is, before the irritation in the chest has increased to a cough. It should be repeated on each return of the irritation. (Dr. F. Churchill, p. 93.)

Lungs, *Inflammatory Affections of.*—In a paper upon the different sounds of the respiratory apparatus, Dr. T. Thompson observes, that in proportion as sounds are confined to inspiration, they afford reason for depletion; in proportion as the rhonchi become bubbling they indicate secretion, and suggest a discontinuance of antiphlogistic treatment. (Dr. T. Thompson, p. 79.)

Phthisis.—To relieve the cough, place from four to ten drops of creosote in the bottom of an old teapot, and then pour a small quantity of boiling water over it. The vapour must he inhaled through the spout, which must be protected by being covered with a little flannel. (Dr. T. Inman, p. 92.)

Tracheotomy.—For some valuable practical remarks on this operation, by Dr. Edwards, of Cheltenham, see page 179.

AFFECTIONS OF THE DIGESTIVE ORGANS.

Artificial Anus.—In a case where the operation for artificial anus had been performed as a temporary resort, the greatest discomfort arose from the fæces passing invariably through the artificial opening, and not through the rectum. At length, when life had become a burden to the patient, it was suggested that some substance, as a piece of brown soap, introduced into the rectum, might induce the return of peristaltic action, and the necessary tenesmus for the expulsion of the contents of the canal. The expedient was perfectly successful, and at the end of two weeks the artificial opening was quite healed and the fæces passed by their natural outlet. (Dr. W. Macdonald, p. 200.)

Colic.—Whatever may be the kind of colic, the first thing is to get the bowels open. First put the patient in a warm bath, and while in it, let him have a warm water enema; this is to be repeated after a time so as to distend the colon. Then give a pill every three hours, until the bowels act, composed as follows: one drachm of compound extract of colocynth, and three drops of croton oil; divided into

twelve. Leeches frequently do good, but the majority of cases do not require them. In the more obstinate and complicated cases, the use of opium will be of the greatest benefit. (Dr. R. B. Todd, p. 126.)

CONSTIPATION, *Obstinate.*—Pass galvanic currents from the mouth to the anus. In this manner it is used most effectually, though the current passed in various directions may be sufficient. In cases where the muscular tone of the bowels has been lost, this would appear a valuable remedy. (Dr. R. Christison, p. 125.)

DYSENTERY.—In Ceylon it commonly appears as colonitis. There they support the patient from the first, depleting, however, by leeches applied to the abdomen; then Dover's powder and ipecacuanha, three grains every third hour, and afterwards these combined with astringents. Quinine is combined with these remedies, twelve or sixteen grains being given in the twenty-four hours. Nitrate of silver injections thrown into the colon are sometimes very beneficial. (Dr. Cameron, p. 133.)

HEMORRHOIDS.—The following would seem an excellent prescription for restraining the flow of blood:—℞. Olei terebinth., 3 ss.; tinct. kino, syrup zingib., āā 3j.; aquæ cinnamomi, aquæ mollis, āā 3 iij.; misturæ acaciæ, q. s. ad bene miscendum. Fiat haustus bis terve die sumendus. (Dr. W. S. Oke, p. 201.)]

HERNIA, *Reducible.*—The contents of the hernia having entered the abdomen, and the spermatic cord being pressed upwards out of the way, twenty or thirty drops of tincture of iodine, tincture of cantharides, or sulphuric ether, are to be injected by a fine trocar and canula into the neck of the sac, or into the vicinity of the external abdominal ring; a slight compress is to be applied to the wound produced by the trocar, then a well-fitting truss is to be slipped down over it, and the patient must keep the recumbent position for a week or two. In some cases a tenotomy knife was previously introduced, and the neck of the sac scarified, which greatly facilitated the introduction of the trocar. (Dr. Pancoast, p. 181.)

Mr. Savory, tutor at St. Bartholomew's Hospital, records four cases, in which, though the taxis at first failed to reduce the hernia, yet, under the influence of chloroform, the taxis being again applied, the reduction was easily made. (p. 184.)

Scrotal.—In describing an obstinate case of this kind, Mr. Hilton remarked that the main obstacle to reduction was the loaded condition of the blood-vessels of the protruded part. This was to be obviated by, first, decreasing the quantity of the circulating medium generally, by purgation, diuresis, and abstinence from fluids; and, secondly, by local means to constringe and unload the congested vessels of the incarcerated omentum, as by the recumbent position and the application of pressure and of cold. It may be remarked that cold, by producing contraction of the dartos, affords the best and most uniform pressure which can be exerted. (Mr. J. Hilton, p. 189)

LIVER DISEASE.—The observations of Dr. Jones lead him to believe that the effect of mercury is undoubtedly to produce very great congestion of the liver; hence, in all inflammatory affections of this viscus, it would appear to be a most improper remedy. (Dr. C. H. Jones, p. 133.)

SARCINA VENTRICULI.—In a case of this disease, of many years' standing, the following was the successful treatment. At first the diet was the same as that ordered commonly in diabetes mellitus. Three grains of sesqui-carbonate of ammonia were given three times a day in one ounce of infusion of quassia, with one to two drachms of sulph. sublim., to open the bowels. Afterwards the same diet was continued, but the medicine was sodæ hyposulph. 3 vj.; infus. quassiæ ʒ xij., ʒ ss. ter die. The only other variation made was, that precipitated sulphur was preferred to sublimed sulphur; and one ounce of cod-liver oil was given three times a day. (Mr. R. Neale, p. 109.)

VOMITING, *Obstinate.*—In a case where all the usual remedies had been tried in vain, a small quantity of chloroform was inhaled to quiet the stomach, but not to produce insensibility. Half a grain of morphia was then given and the inhalation renewed. The patient was kept fully under its influence for a few minutes, and when consciousness returned he was free from all feeling of sickness. The inhalation was kept up slightly for an hour and a quarter. He had no return of the sickness for twenty-four hours. A slight return was checked afterwards in the same way. (Mr. G. H. Heath, p. 310.)

TAPE-WORM.—Dr. Christison used at first eighteen-grain doses of the oleo-resinous *extract of* the male-shield-fern, but he now recommends twenty-four grains, as he

finds there is much greater certainty of getting rid of the worm, and less uneasiness felt. The *Lastræa Filix-mas* is the proper species to be used. Dr. Christison believes the plant to be efficacious enough at any season, if it be used fresh, as the extract he used was made with roots collected in February, two months before the young fronds in Scotland begin to peep above the ground. (Dr. R. Christison, p. 127.)

Thrush.—Dr. Jenner says this disease depends upon the presence of a parasite. It is speedily removed by applying a solution of sulphite of soda, 3 j. to the ℥j. of water. The secretions of the mouth, being acid, combine with the alkali and set the sulphurous acid free, which is the active agent in destroying the parasite. (Dr. W. Jenner, p. 227.)

AFFECTIONS OF THE URINARY ORGANS.

Bladder, *Gout in the.*—In this disease the mucous membrane of the bladder readily secretes pus. If this is not freely evacuated, the urine becomes alkaline from the retention of a small portion of it, and the subsequent formation of ammonia by the decomposition of the urea. This alkaline urine again keeps up the irritability of the bladder, which thus goes on secreting pus. There is also, in this disease, frequently incontinence of urine, not because the sphincter vesicæ is paralysed, but because the bladder will not allow the accumulation in it of even small quantity of urine. In other cases there is an opposite condition; the patient may have retention of urine. This is easily explained: in the former case, the gouty poison was irritating the mucous membrane; in the latter it has affected the muscular coat. Now, if, in these cases, we find it clearly proved that the man has the gouty diathesis, and that there is no stone in the bladder, we may consider the eruptions to arise from gouty inflammation attacking the bladder. In the treatment, we must first counter-irritate, but not with turpentine or cantharides, for obvious reasons, but with mustard or strong ammonia. To relieve pain, if it be that form of the disease in which pus is generated, we may apply opium endermically, or apply an opiate liniment over the bladder, or we may give an enema containing opium by the rectum, repeated or not according to the relief obtained. In these ways all kinds of irritability of the bladder, even that produced by cantharidine, may be relieved. It should be borne carefully in mind, that, whenever gout attacks internal organs, it is a disease of an asthenic character, and therefore depletory measures should in no case be employed. (Dr. R. B. Todd, p. 114.)

Irritability of.—A patient, of nervous temperament, with soft and flabby muscles, had irritability of bladder, which ordinary remedies had failed to relieve. A solution of nitrate of silver, twenty grains to the ounce, was introduced into the bladder, and so great was the relief that the symptoms entirely disappeared for six months. At that time the same treatment repeated completely removed the symptoms. (Mr. W. Reeves, p. 208.)

Calculus, *Uric Acid.*—In a case of stone in the bladder, in which the patient occasionally passed a gritty sediment, considered to be lithic acid, Mr. Bulley ordered the following: ℞. Potassæ bicarb. gr. x.; sodæ carb. gr. xij.; potassæ nit. gr. viij.; Ft. pulv. To be dissolved in a tumbler of tepid water, and taken twice a day. In six months all attempts to discover the stone proved vain, and the gritty deposit had entirely disappeared. The greatest advantage may also be derived in these cases from taking two to four drachms of bicarbonate of potass, dissolved in thirty or forty ounces of water in the twenty-four hours. (Mr. F. A. Bulley, p. 216.)

Epididymis, *Inflammation of.*—Pencil the scrotum with collodium. In five cases in which it was applied, three were cured within six days by one application; the fourth in seven days after two applications; and the fifth in eleven days after three applications. (Dr. Lange, p. 217.)

Hydrocele.—The colour of the fluid may be easily diagnosed in common day light by looking through a tube, one end of which is firmly placed against the tumour. In the treatment, tincture of iodine is generally used in London as an injection. Mr. Lloyd uses the ointment of the nitrico-oxide of mercury, passing a tube smeared with it through the canula, and moving it about in the inside of the sac. Mr. Wormald prefers the palliative treatment, making twelve or twenty punc-

tures with a full-sized needle, and repeating the operation when the sac refills. (Mr. E. Stanley, p. 218.)

Lithotomy, *New Operation for*.—This operation may be described briefly as follows: The rectum is cut into from the median line of the perineum, and thus freely dividing the commissure of the sphincter ani. From this dissect upwards in the median line to the membranous urethra, which is slit up as far as the edge of the prostate, the knife being guided by a previously introduced staff. The prostatic urethra is then dilated until of sufficient size to allow of the introduction of the forceps and the extraction of the stone. The bladder and the prostate are therefore not wounded. (Mr. E. A. Lloyd, p. 205.)

Renal Disease, *Acute*.—Where we have albuminous urine and dropsy, the greatest possible care should be taken to guard against cold, because it is the chief cause in the production of renal disease, and therefore must tend to perpetuate it, if it already exist. In cold weather the patient must be absolutely compelled to keep in bed, both on account of insuring the horizontal position, and also the equable warmth of the skin. The diet should be scanty, and, unless specially indicated, alcoholic stimulants should not be given. The next thing is to obtain free action of the skin and bowels; the first by the hot-air bath and diaphoretic medicines, the latter by saline aperients, and the pulv. jalapæ comp. In no case must stimulating diuretics be given. When the case has become chronic, then, at all hazards, we may be necessitated to use them. When the acute stage has passed and there is danger of its merging into a chronic form, if the case does not progress favourably, the patient should at once be removed to the sea-side, or better still, take a sea voyage. When cerebral symptoms are produced by the accumulation of urea in the blood, the congestion of the kidneys not allowing it to pass through them, we must resume a moderate quantity of blood by cupping over each kidney, at the same time acting on the bowels by elaterium, or the comp. jalap powder, with a few grains of calomel added. The head must also be kept cool, and, if the symptoms are persistent, a cold lotion or iced-water must be applied to the shaved scalp. (Dr. G. Johnson, p. 134.)

Renal Dropsy, *Acute*.—1. General bleeding, or cupping on the loins, or the daily application of large mustard poultices. 2. Hydragogue cathartics, as the pulv. jalap. co., relieving the serous accumulation in the blood-vessels, and aiding elimination. 3. Excite the action of the skin by liq. ammoniæ acetatis, either alone, or with ipecacuanha and camphor mixture, and by the hot-air bath. 4. Keep the patient in the horizontal position, favouring the flow of blood from the kidneys. Lastly, when the albumen ceases to pass through the kidney, as the patient will be getting anæmic, give the citrate or some other preparation of iron. (Dr. Budd, p. 38.)

Retention of Urine.—In cases of retention of urine from stricture, and where extravasation is also present, so great are the difficulties frequently attendant upon the operation of opening the urethra behind the stricture, that Mr. Cock thinks it more expedient (where it is necessary to make an outlet through the perineum) to make an incision down to the neighbourhood of the urethra, and having laid bare the site of the canal, to introduce the catheter through the wound in the urethra, into the bladder. If the opening cannot be easily found, he subjects the patient to no further examination, and he has generally found that after this operation the urine has speedily made its way through the incision. Afterwards, when the swelling has diminished, and the parts have become quiet, the instrument may be generally passed through the wound into the bladder. (Mr. E. Cock, p. 210.)

Stricture of the Urethra.—Dr. Dick operated in a case of stricture as follows: Making a very small opening above the stricture through the integuments into the urethra, he introduced a curved tenotome and divided the stricture from before backwards. The ready passage of the sound proved that the stricture was completely divided. (Dr. H. Dick, p. 215.)

New Director for —In his operation by external incision, Mr. Syme has frequently found the inconvenience of not being able by ordinary instruments to thoroughly divide the contracted portion of the urethra. To this fact, Mr. Syme believes, are owing the relapses said sometimes to take place. He has had a solid director recently made, but with a long slender portion, which is grooved, and this latter part *being much smaller* than that usually employed, passes with more readiness com-

pletely through the stricture. The operator now cuts through the integuments above the stricture into the groove, runs the knife down until the contraction is completely divided, as is readily seen by the thicker portion of the director passing easily through the whole length of the canal. (Prof. Syme, p. 215.)

DISEASES OF THE SKIN, &c.

Carbuncle.—If the carbuncle is exceedingly painful, and the inflammatory action very great, apply fomentations and poultices for twenty-four hours. Then cover it over with the common lead or litharge plaster of the shops, spread on leather. The plaster is best without any admixture. Its chief value is, that it promotes the perspiratory exhalation from the skin. (Mr. R. Flint, p. 237.)

Erysipelas.—Salts of iron taken internally have been observed to be valuable in erysipelas. Mr. Aran, to facilitate their application, makes a preparation (*ferruginous collodion*) formed by mixing equal parts of collodion and an ethereal tincture of perchloride of iron. Spread on the affected part it is said to have proved very valuable. (p. 321.)

And Paronychia.—The following lotion should be used warm: Three grains of burnt alum, two grains of sulphate of zinc, and two grains of acetate of lead, to every ounce of water. (Dr. F. J. Brown, p. 233.)

Pityriasis Capitis.—Apply nitrate of mercury ointment made softer by diluting it with almond oil in cases where there is dyspepsia. A few doses of alkali and bitters, in addition, will do good. Where the trunk is affected, apply, every second or third day, by means of a sponge, a solution of nitrate of mercury in distilled water, much weaker in strength than the ointment. (Mr. G. Duplex, p. 232.)

Wash the head every morning in cold water, and give two tablespoonfuls of the following three times a day: One drachm of sesquicarbonate of soda, dissolved in six ounces of any bitter infusion. (Mr. J. O'Connor, p. 232.)

Apply the following lotion: Fresh sulphuret of potash ℥ j., distilled water ℥ iij. It may be used once a day. (Mr. J. Winzar, p. 330.)

Psoriasis.—Let the diet be nourishing. ℞. Potass. acet. ʒ ij.; aquæ ℥ iij. Of this one drachm to be given in a little water three times a day. Locally, the limbs to be placed for five minutes in the morning into a tepid bath, containing one drachm of bicarbonate of soda. The scales to be gently removed with a soft flesh brush, and then the following applied:—℞. Plumbi diacet. sol. ℥ j. ʒ vj., sol. mur. morph. ʒ ij.; a teaspoonful to be mixed with a tablespoonful of cream and applied to the limbs. (Dr. R. Crawford, p. 233.)

Purpura Hemorrhagica.—In a case of this disease occurring in a child four years old, the following mixture (the active remedy being turpentine) was given with the most satisfactory results. ℞. Olei terebinth. ℥ ss.; ol. ricini ℥ j.; mucilaginis, sacchari, ää, q. s.; olei caryoph. gtt. iv.; aquæ dest. ℥ viij. Misce ut fiat mistura, cujus sumat cochlearia ij. vel iij. bis vel ter in die. (Mr. W. Smith, p. 319.)

Give five-grain doses of gallic acid every three or four hours. (Mr. T. P. J. Grantham, p. 318.)

Ringworm.—This disease is commonly called in this country Porrigo scutulata. It is a disease in the interior of the roots of the hairs. M. Bazin recommends an ointment composed of lime and carbonate of soda, equal parts, with lard thirty parts. If the hairs are removed, then a solution can be applied to the hair follicles, in which are situated the prolific spores of the fungus. In this case any of the following remedies may be used:—A solution of bichloride of mercury, 1 part to 250 of water; or 1 part of acetate of copper to 500 of lard: One part of pernitrate of mercury to 30 or 40 of water is an excellent remedy, but is very powerful, and should be used cautiously. A good ointment may be likewise made by mixing 1 part of sulphate of copper, 3 parts of alum, to 20 or 30 parts of lard, according to the age of the patient. Chlorine water might also answer the same end; but probably the most efficacious agent for the destruction of this vegetable growth is sulphurous acid. (M. Bazin, Dr. E. A. Parkes, p. 231.)

Snake-bite.—Arsenic has been recently employed for the treatment of these cases, and it is singular that persons having been bitten by snakes recovered com-

pletely by this treatment, without any of the poisonous symptoms of arsenic being manifested. Mr. Ireland prescribed liquor arsenicalis 3 ij.; tinct. opii gtt. x.; aquæ menthæ pip. ℥ iss. To this quantity half an ounce of lime juice was added, and the medicine taken in an effervescent form. A grain of arsenic every half-hour looks formidable treatment, but it was certainly successful in snake-bite, and may be so in hydrophobia. Arsenic would seem to stimulate specifically the semilunar ganglion and its tributaries, presiding over the organic life of our bodies. (Mr. B. Travers, jun., p. 317.)

Tinea Favosa.—Apply a solution of sulphurous acid constantly to the scalp. Afterwards, zinc ointment may be applied. This disease depends upon a parasitic growth which is destroyed by the sulphurous acid. The solution may be made by saturating water with the gas and then mixing ℥ ij. of this to ℥ vj. of water to make a lotion. (Dr. W. Jenner, p. 227.)

Ulcers.—Mr. Wells has used, in the treatment of ulcers, two kinds of galvanic apparatus. First, a single pair of plates, viz., an oval plate of zinc from one to three inches in the long diameter, and a plate of pure silver of the same size and form, the two being connected by a silver wire soldered to the back of each plate. The second is Pulvermacher's electric chain, which he has used with six and eighteen elements. The following are his conclusions with regard to the value of these in ulcerations. 1. To secure the effects of the apparatus, it is necessary that the surfaces of the two metallic plates be perfectly smooth and clean, and that they should be applied to the body without intervention of any substance whatever. 2. If two slight excoriations, two ulcers or suppurating surfaces, upon a limb or any part of the body, be acted upon by a pair of plates, the zinc being applied upon one, the silver on the other, the surface beneath the silver rapidly cicatrizes, while that beneath the zinc is in two days converted into a superficial eschar. If the plates be still kept applied, the eschar extends to the subcutaneous cellular tissue, and presents all the characters of a slough produced by caustic potash, except that the dead tissues are a little less compact. 3. On the third day the surface level of the skin and granulations of the skin is often uniform, the well-known marginal blue rim announcing the commencement of cicatrization. When this point is attained, it is better not to apply the apparatus again, but to employ simple water-dressings, or, if there be any tendency to flabbiness in the granulations, dry lint, and a strap of adhesive plaster. 4. When the zinc plate is applied upon the superior portion of a very large ulcer this portion alone improves in appearance, while the inferior portion degenerates; but if the plate be applied upon the lower portion only, the whole surface of the ulcer improves equally. 5. In cases where several ulcers exist upon a limb, and the zinc is applied to a superior, the silver to an inferior one, all the ulcers situated in a direct line between the two plates improve in appearance, become healthy sores, and cicatrize, while those on either side of the current remain unaltered, and sometimes degenerate. 6. When the silver plate is applied upon the extremity of a fistulous sore the effect does not extend beyond the edges; but if a projecting portion of the silver be carried to the bottom of the fistula, granulation rapidly follows. It is very easy to perforate the silver plate by a screw, the point of which is smooth, and adapted in size and shape to that of the fistula. 7. In several cases, normal innervation has been restored in paralysed parts under the use of this apparatus, the zinc being placed superiorly, and the silver inferiorly, so as to include as nearly as possible the whole of the paralysed part. Disordered function of particular nerves has been also remedied, by so placing the two plates that the nerve lies between them. 8. In ordinary cases of ulcer Mr. Wells prefers the plates to the chains, where they can be applied without producing painful or injurious pressure. The chains are preferable when ulcers are situated over bones, or are too sensitive to bear metallic pressure. (Mr. T. S. Wells, p. 241.)

Indolent.—The principle in Mr. Gay's method of treating ulcers which have resisted all other modes, is to relieve the tension of the skin or other tissues, by making incisions at right angles with the line of tension; or where the tension is at the edge of the sore, to supply new skin altogether by a species of plastic operation. (Mr. J. Gay, p. 239.)

Mr. Chapman, of Lower Seymour-street, proposes a modification of Mr. Gay's new operation, where the edges of the ulcer are adherent to the tissues beneath; *this is, to glide* a double-edged bistoury under the tense margins of the sore, so as

to set them free, and allow of their edges being brought as near into contact as possible across the suppurating surface. (p. 241.)

FRACTURES AND DISEASES OF BONES AND JOINTS.

ANCHYLOSIS.—In true anchylosis, the callus may be broken up. Langenbeck's plan was as follows: The pelvis having been fixed, supposing the joint to be that of the knee, extension was carefully and slowly made if the limb was flexed, and flexion if the limb was extended. The force employed must be carefully regulated by the surgeon himself according to the nature of the case. The degree which the callus has yielded must be preserved until the next time, passive exercise being used during the interval. If there be great care exercised, little or no inflammation may be set up. The patient should be subjected to the same treatment every two or three days. Three or four weeks are commonly sufficient to restore the action of the joint; but sometimes two or three months are necessary. (Dr. W. H. Hingston, p. 160.)

FRACTURES.—For a new method of treating fractures, by means of a jointed splint, whereby it can adapt itself to the exact shape of the limb, see p. 146. (Mr. Winchester.)

For a description of Mr. Greenway's improved fracture apparatus, and its advantages, see p. 145.

KNEE-JOINT, *Excision of.*—The following description of the operation of excision of the knee-joint as performed by Mr. Jones, of Jersey, in a case under his care, will show the formidable nature of the operation, and can scarcely fail to be interesting. The case was one of extensive ulceration of the cartilages. It is gratifying to know that the result was completely successful. It was performed as follows: A longitudinal incision was made on each side of the knee-joint, midway between the vasti and flexors of the leg, full five inches in extent; rather more than half the length was over the femur, and rather less than half over the tibia. These two cuts were down to the bones; they were connected by a transverse one just over the prominence of the tubercle of the tibia, care being taken to avoid cutting the ligamentum patellæ by this incision; the flap thus defined was reflected upwards, the patella, its ligament, and the joint thereby exposed. The synovial capsule was cut through as far as it could be seen; the patella and its ligament were now drawn over the internal condyle, while the joint was kept extended. It was next forcibly flexed, the crucial ligaments, almost breaking in the act, only required a slight touch of the knife to divide them completely; the articular surfaces of both bones were thus completely brought to view, and nearly two inches of the femur and half-an-inch of the tibia were sawn off, the soft parts being drawn aside by assistants. The external condyle of the femur was found hollowed out by a large abscess, and it was necessary to saw off a portion of the carious bone, and to gouge the remainder, until healthy cancellous tissue was reached. The entire synovial membrane was in a state of pulpy degeneration, and was carefully dissected off. The hemorrhage had been rather great, but had now almost ceased, and no vessel required deligation. The blood was sponged out of the wound, the patella (after the diseased portion had been gouged out) and its ligament were replaced, as nearly as possible, in their natural state, the bones brought in apposition, the flap brought down and held by sutures, the limb bandaged on a slight under-splint and laid in a box, the wound covered with moist lint, and the boy put to bed yet asleep. The operation occupied full twenty minutes, and was performed while the patient was under the influence of chloroform. (Mr. G. M. Jones, p. 155.)

KNOCK-KNEES.—An operation is described by Dr. Mayer, of Wurzburg, whereby this deformity was remedied. The front and inner side of the head of the tibia having been deprived of integument and periosteum, a wedge was cut from this portion nearly of the thickness of the bone. By straightening the limb the bony surfaces were brought in contact, and the limb acquired its natural shape. In a month the parts were completely healed and the weight could be borne upon the leg. Soon afterwards the other leg was operated upon with the like success. (Dr. Mayer, p. 164.)

VENEREAL AFFECTIONS.

Bubo.—Puncture, if performed by the lance-headed needle of Dieffenbach, rarely fails to successfully cure bubo. The needle should be introduced into the tumour at the lower part and pushed up into the pus; on its withdrawal, and on gently squeezing the bubo, the matter will flow out. The opening should now be cleansed and closed by isinglass plaster, collodion, or lint, firmly applied. The puncture must on no account be re-opened. The bubo must be again tapped as often as it is filled by pus; the quantity becomes less after each operation, and at last is completely eradicated. (Mr. J. L. Milton, p. 218.)

If the inflammation is not great, apply layer after layer of collodion until a powerful compression is produced. If there be inflammation, previously apply leeches. (Dr. Clairborne, p. 221.)

Chordee.—When the penis is relaxed, cover it with a layer of collodion. In a case related, this prevented the erection; but it returned when the collodion was removed. (M. Doringer, p. 221.)

Gleet and Obstinate Gonorrhœa.—If there be no stricture, use nitrate of silver injections, raising the strength from one grain to ten grains to the ℥j. of water. The pipe of the syringe should, at least, be two inches long, because on the lower surface of the urethra there are certain sensitive spots, and so long as these exist, the discharge will not give way. If the injections fail the urethra should be sounded, and if a stricture is found, the bougie must be used. There is an intermediate state of stricture, one in which it is forming, and in which the urethra feels granular. In this state the remedy is the bougie, perseveringly used. If, however, the injections fail and no stricture is found, then a blister should be applied. (See vol. xxiv., p. 271.) This is the quickest, safest, and most efficacious remedy which has yet been proposed. After the blister the patient should be kept quiet for three or four days, and when the blister begins to heal up, a few mild injections should be given. Zinc. sulph. gr. x. ad ℥j.; sp. camp. ♏xx.; aquæ destil. ℥j. A teaspoonful to be used three times a day. (Mr. J. L. Milton, p. 221.)

AFFECTIONS OF THE EYE.

Amaurosis.—It is singular what a small amount of strychnia sometimes produces wonderful effects. In a case of this disease succeeding retinitis, the following pills were prescribed: Strychnia one grain, ext. gentian six grains; to be divided into twelve; one to be taken every night. In a week the patient was greatly improved, and in two months vision was completely restored. (Dr. D. Griffin, p. 248.)

Distichiasis.—The following method of treating single hairs when inverted is worthy of attention. Place the horn spatula within the lid, and make an incision with a small knife down to the root of the inverted lash, wait until the hemorrhage has ceased, and then apply a point of nitrate of silver down to the bottom of the wound, by means of a porte-caustique, and remove the lash. This plan seldom fails, though it frequently destroys two or three of the neighbouring cilia. (Mr. W. R. Wilde, p. 330.)

Epiphora.—A frequent cause of this disease is displacement of the inferior punctum, so that the tears never reach the orifice at all. The canal must be slit up from the punctum, to such an extent as to carry back the orifice to that part of the conjunctival surface where the tears are collected. The wound should be kept open for a few days, that the canal may be converted into a groove. (Mr. B. Bell, p. 249.)

Iritis.—Having reduced the inflammation by ordinary measures, give mercury according to the severity of the case and the vigour of the patient, one or two grain doses three times a day, until the system has become influenced. When the acute stage has passed, a few grains of powdered bark assist in re-establishing tone in the vessels, and repressing lingering congestion. A corresponding change in diet should also now take place. Aconite is sometimes an admirable remedy, but it is *uncertain*, and sometimes dangerous in its action. It may be used in those cases *which resist* ordinary treatment, in doses of ten minims of the tincture three times

a day. The greatest caution should be observed in its use. In the *syphilitic disease*, if there be racking pain about the globe, forehead, and temple, we may give an opiate, when the dilatation of the pupil is fully effected by belladonna. We may use simple opium, or the pulv. ipecac. co., or a preparation of morphia, or apply the mercury and opium ointment or the belladonna liniment to the seat of pain. In all cases of iritis, we should apply belladonna round the orbit, keep the patient in a darkened room, and abstain from giving opium until dilatation of pupil be effected. In syphilitic iritis turpentine is the remedy introduced by Mr. Carmichael, of Dublin, and may be given with great advantage. One drachm may be given three times a day, made into an emulsion. Blisters are very valuable, but should be applied behind the ear, or to the nape of the neck. (Mr. J. France, p. 245.)

Purulent Ophthalmia, *in Infants*.—If the inflammation is excessive, the conjunctiva may be scarified, and fomentations employed; but these are exceptional cases. The bowels may be opened in the first instance by the grey powder with rhubarb, and afterwards by castor oil. Then the eye must be thoroughly cleansed from all purulent secretion by ablution, or by means of a syringe (a sponge should not be used for any other purpose, on account of the contagious character of the disease). The agglutination of the palpebræ may be prevented by the application of some mild unirritating ointment smeared over the lids, as by the ung. cetacei, or ung. zinci. Then a lotion, containing a grain or a grain and a half of nitrate of silver to the ounce, may be used, two or three drops being introduced upon the conjunctiva three times daily, taking care to cleanse the eye first. When the complaint is subdued, and lest the eye should become discoloured, we may employ a lotion composed of sulphate of zinc two grains, wine of opium two drachms, rose water six drachms. If this does not answer, an alum wash may be substituted. If an ulcer should form, and an opening be effected into the interior chamber, a point of nitrate of silver should be introduced, and if the iris protrudes, belladonna should be applied. (Mr. J. France, p. 253.)

Squinting.—This condition has been recently cured by the use of prismatic spectacles. Supposing the squint to be internal, for example, the prismatic glass is placed to the outer side of the eye, so that at length by the constant straining efforts of the eye, to obtain an accurate view, the eye-ball is gradually drawn more into its natural position. As this natural state is more and more perfected, prisms should be used of gradually diminishing power. (Mr. T. S. Wells, p. 255.)

MIDWIFERY AND DISEASES OF WOMEN.

Chlorosis.—In ordinary cases let one of the following pills be taken every other night: ℞. Hyd. chlorid. gr. xij.; pil. aloes cum myrrha gr. xlviij.; syrupi, q. s. Misce et divide in pil. xij. Two of the following pills should also be taken three times a day: ℞. Pil. ferri comp. ʒiij.; divide in pil. xxxvj. If diarrhœa be present leave off the aperient pill, and let the following be taken: ℞. Pil. ferri comp. ʒiij.; pulv. opii gr. iv.; syrupi, q. s. Misce et divide in pilulas xxxvj. quarum capiat duas ter die. If pills cannot be taken use the following: ℞. Mist. ferri comp. ʒviij.; decoct. aloes comp. ℥iv. Misce. Capiat ℥iss. ter quotidie; and open the bowels by the following: ℞. Hyd. chloridi gr. j.; pulv. aloes socot. gr. iij.; pulv. cinnam. comp. gr. ij. Misce. Fiat pulvis noctibus alternis sumendus. (Dr. W. S. Oke, p. 286.)

Dysmenorrhœa.—Let two of the following pills be taken three times a day: ℞. Pilulæ ferri comp. ʒij.; extract. conii ʒj. Divide in pilulas xl. (Dr. W. S. Oke, p. 286.)

Ergot, *Substitute for*.—Dr. Washington, of America, has discovered that dry cupping on the lowest part of the sacrum produces dilatation of the os uteri, and higher up contraction of the uterus. We may use one or other of these according to the nature of the case. But the lower one should always be on when the upper one is applied, so as to ensure relaxation of the os when the pains come on. (p. 273.)

Mammæ, *Galactagogue and Emmenagogue Effects of Warmth and Stimulants to*.—Dr. Cormack relates some interestiug cases illustrating the effects of hot fomen-

tations to the breasts. Warmth and stimulating applications often act powerfully as galactagogues, especially if the infant is periodically applied to the breast as well. If these should fail to produce a secretion of milk, a poultice made of two or three parts of bread to one of mustard, separated from the skin by a fold of soft linen, may be applied for half an hour, in the intervals maintaining great local warmth by means of abundance of cotton wadding. In a case where it seemed almost impossible to get rid of the milk and where abscesses threatened, all irritation about the breast, as well as the milk, completely disappeared in a few days by using a generous diet and removing all the stimulating applications which had been applied. (Dr. J. R. Cormack, p. 270.)

MENORRHAGIA.—It may be observed that opium is a valuable remedy in menorrhagia from its increasing the force of circular muscles. It is important to notice that henbane, hemlock, and belladonna relax these. (Dr. W. S. Oke, p. 287.)

Give 3j. doses of the tincture of cinnamon every six hours, and continue it for fourteen days after the symptoms have disappeared. If the case has been an obstinate one continue the dose once daily for a month. (Dr. T. H. Tanner, p. 288.)

PREMATURE LABOUR.—There is a great and undoubted sympathy between the breasts and other parts of the sexual apparatus. It was supposed that irritation of the mammary nerves might induce uterine action. This was tried. Sucking pumps, made of caoutchouc, were applied for two hours seven times during three days; after the third application the cervix uteri was shortened, after the sixth severe labour pains came on, and after the seventh the child was born. (Dr. Scanzoni, p. 263.)

PROLAPSUS UTERI.—This operation is performed briefly as follows. A trivalve speculum having been introduced into the vagina, so as to distend its walls, small self-closing forceps, by means of a holder, are attached to the partition of mucous membrane between the blades of the speculum, each portion receiving two or three, so that nine pairs of forceps may be applied in the whole. Each of these has a piece of string passed through the blades to aid, if necessary, their withdrawal. A pessary is then introduced and retained by a few folds of the T bandage. The patient is then put to bed. The forceps generally fall off from the fifth to the tenth day. The operation is to be repeated on other parts of the vaginal surface until its walls no longer project between the blades of the forceps. (M. Desgranges, p. 277.)

In a case of long continued prolapsus, and in which the vagina was very lax and distensible, Mr. Marshall determined to apply the galvanic cautery to produce a series of eschars upon the walls of the vagina. A peculiar speculum made for the purpose, consisting of two large blades, and enclosing double rows of fenestræ about an inch in length and half an inch in breadth, having been introduced and the blades separated, the mucous membrane was seen to bulge through the apertures. The coil of heated wire was now applied, and eight eschars rapidly made on each side of the vagina. For the first fortnight the patient was confined to bed, and detergent injections used twice daily; as the sloughs separated, mildly stimulating ones were applied. The capacity of the vagina was considerably diminished, and on moving about no prolapsion was found to take place. It is important to observe that if the vagina is protruded, it must be first returned, as, although under these circumstances it may be easier to apply the cautery, yet it is most difficult and dangerous to return the mass afterwards. (p. 274.)

VESICO-VAGINAL FISTULÆ.—Having exposed the opening by a proper speculum, Mr. Marshall applied the galvanic cautery, at a white heat, over the whole of the exposed edge. The operation was repeated seven times, at intervals varying from three to eight weeks. The opening would originally have admitted three fingers, but after every operation the size gradually diminished, until at length the patient could fulfil her duties comfortably. (Mr. Marshall, p. 273.)

PUERPERAL CONVULSIONS.—The inhalation of twenty minims of chloroform produced almost a magical effect in a violent case of this alarming disease. (Mr. H. Rudge, p. 265.)

WOMB, *Fibrous Tumours of.*—Mr. Teale recently removed a large fibrous growth from the interior of the uterus. The tumour had protruded through the mouth of the womb and filled the vagina. It was so large that the fingers could not be passed above it to determine its mode of attachment. The treatment adopted in *this case,* which Mr. Teale also recommends in similar ones, is, to pull down the

tumour beyond the external parts, if necessary, by midwifery forceps or other means, and partially or completely invert the womb. The operator can then ascertain whether the tumour be pedunculated or imbedded in the wall of the womb. Should the latter mode of attachment be found, he recommends the investing membrane of the tumour, a little below its attachment, to be carefully cut through in a transverse direction, by long curved probe-pointed scissors, to such an extent as to allow of the tips of two or three fingers to be insinuated between the investing membrane and the tumour, and the process of enucleation to be completed by detaching the upper part of the tumour from the wall of the uterus, after which the remaining attachment of the investing membrane may be divided by the scissors, and the tumour removed. If the uterus should remain inverted, it must be immediately replaced by gentle but firm pressure, which may generally be done without difficulty, as the os uteri has been so long subject to distension that it will offer but little resistance. (Mr. T. P. Teale, p. 289.)

MISCELLANEA.

Asphyxia *from Chloroform.*—Artificial respiration, as recommended by M. Ricord, in cases where the fatal effects of this drug are manifesting themselves, cannot be too strongly insisted upon; but it must be well done, and steadily persevered in. In a case mentioned by Mr. Lowe, full eight minutes elapsed before the success of the treatment was made certain. (Mr. E. W. Lowe, p. 316.)

In using artificial respiration in asphyxia from chloroform, it is very important to notice that the tongue should be drawn forward to ensure the free entrance of air to the lungs, as when the patient is laid on his back the tongue is particularly liable to fall back and close the orifice of the glottis. (Mr. E. R. Bickersteth, p. 314.)

Disinfectant.—In Carlisle, on the suggestion of the Rev. Mr. Dew, of St. Cuthbert's church, great comfort has been found in introducing a few shovelfuls of soot as a deodorizer in the removal of night soil and manure. (Dr. Elliot, p. 330.)

Finger, *to remove a gold ring from.*—First, polish the outer surface of the ring by means of a strip of linen and prepared chalk, then apply quicksilver to the whole surface of the ring; in the course of a few minutes, by means of gentle pressure made upon the ring, it will break in pieces. The mercury amalgamates with the gold, crystallizing it, and rendering it brittle as glass. (Dr. Castle, p. 321.)

Wind closely and tightly round the finger, as far as the ring, a piece of well-soaped twine; then, with the end of a needle or probe, force the end of the twine beneath the ring, and gradually unwind. The ring will come off with the twine. (Dr. Newnham, p. 321.)

Whey.—Receipts for the preparations of the different kinds of whey (which has long been employed as a curative agent in various aliments of a chronic character) will be found at p. 321.

ASIATIC CHOLERA.

Prevention.—During the prevalence of cholera, persons in connexion with cholera patients should carefully wash their hands before taking food. The soiled linen should be immediately immersed in water as soon as it is removed. The greatest care should be taken that the water for drinking be not contaminated by cesspools, drains, or sewers. If suspected, it should be boiled and filtered. The provisions should be well washed with clean water, and, if possible, exposed to a temperature of at least 212° F. When a case of cholera appears in crowded neighbourhoods the healthy should be immediately removed, except those absolutely necessary to wait upon the sick. (Dr. J. Snow, p. 301.)

Calomel Treatment.—Give grain-doses of calomel repeatedly, with one or two drops of laudanum with each dose, up to 24 or 30 drops, when it may be discontinued. Dr. Ayre speaks with the greatest praise of this simple mode of treatment. He says, that as soon as the secretion of the liver is restored a favourable change takes place. It would seem to be very difficult to salivate a patient in this disease. (Dr. J. Ayre, p. 301.)

In collapse pursue the following treatment. Give 15 grains of sulphate of zinc, and 15 grains of ipecacuanha, and repeat the emetic in ten minutes. In about twenty minutes place upon the tongue 20 or 30 grains of calomel, and repeat from 2 to 10 grains or more, every ten, twenty, or thirty minutes, according to the severity of the symptoms. Give beef-tea injections every half hour to support the strength. Allay vomiting or thirst by ice or very cold water, in teaspoonful doses, ad libitum. Avoid giving stimulants. When the stools contain bile continue small doses of calomel for a short time, then give 20 grains of rhubarb and 30 of sulphate of potash, in peppermint water, or a castor oil draught. Afterwards reduce the fever by salines; and lastly, restore the strength by quina, ammonia, &c. (Mr. F. W. Richardson, p. 303.)

Counter-irritation, Calomel, Astringents, &c.—The author says he has tested the following plan of treatment in nearly all parts of the world. Turpentine epithegms, or mustard poultices, to be applied to the abdomen frequently. Give ten grains each of calomel and prepared chalk, in treacle, every hour, along with half an ounce of the following mixture: Take of compound powder of chalk with opium, powdered acacia, and white sugar, each two drachms; sesquicarbonate of ammonia, one and a half drachm; cajeput oil, twenty minims; tincture of catechu, three drachms; with camphor mixture, eight ounces. When the stools become feculent, substitute the following until the purging stops. Take of acetate of lead, half a drachm; Battley's sedative solution of opium, fourteen minims to one drachm; oil of cinnamon, four minims; tincture of ginger, three drachms; and infusion of quassia, eight ounces. An ounce may be given every two hours. (Mr. C. A. Chavasse, p. 304.)

Croton Oil.—Give one or two drops of croton oil on a small piece of sugar, and repeat it every two or three hours if the vomiting and purging continue. At the same time, apply hot bricks or bags of hot sand to the feet. The action of this remedy in this disease is not clear, but it certainly does not act as a purgative. (Dr. Hancox, '*Lancet*,' Oct. 8, 1853)

Quinine.—Of all remedies hitherto tried as a palliative, with the exception perhaps of opium, there is none more deserving of further trial than quinine. (Ed. 'Med. Times and Gazette,' p. 409.)

Sulphur.—In the ordinary diarrhœa preceding cholera give a quarter of the following mixture every two or three hours: Twenty grains each of precipitated sulphur and sesquicarbonate of soda, two drachms of tincture of lavender, and six ounces of water. Hot fluids and vegetables should be avoided. If the disease has advanced to vomiting give the remedy every quarter of an hour until it stays upon the stomach. If diarrhœa has preceded the treatment by some days, give five or ten minims of tincture of opium with each dose. (Mr. J. Grove, p. 304.)

Sulphuric Acid.—Dr. Fuller sums up his experience as to the value of sulphuric acid as follows: In Asiatic cholera, given in 3ss. doses of the dilute acid, he says it exercises a most favourable influence. In bilious diarrhœa he believes it to have little or no effect, but in epidemic or autumnal diarrhœa and in more decided choleraic diarrhœa he has never known it to fail. To render it a certain and effectual remedy the above dose should be given every twenty minutes. (Dr. H. W. Fuller, p. 305.)

"Maxwell's Remedy."—Give one scruple of sesquicarbonate of soda with three grains of opium, in a bolus, washed down with another scruple of soda, in a wineglassful of water, *as hot as the patient can swallow it*. Repeat it in the evening, with two grains of opium if necessary, and afterwards give it in diminished doses. (Dr. Maxwell, p. 307.)

Decoction of Catechu, &c.—When the cholera broke out in the 37th regiment, at Colombo, in Ceylon, in 1847, after trial of various systems of treatment, the most successful plan was found to be strong decoction of catechu administered both by the mouth, combined with laudanum, and by enemata (to the amount of two washhandbasinfuls) conjoined with laudanum, turpentine, ether, ammonia, &c., according to the circumstances of the case, and the condition of the patient. The intense pain in the epigastrium, and the vomiting, are best relieved by applying hot spirits of turpentine to the stomach, and iced drinks, especially champagne. Excess of stimulants is fraught with great danger. The inhalation of ether was tried, but *with questionable* success. In some cases, however, a remarkable restoration of

enticular warmth took place, and increased fulness and force of pulse. (Mr. A. J. J. Chitty, p. 309.)

SALINE INJECTIONS.—As the saline constituents of the blood in cholera are greatly diminished, keep ready for solution the following powder: Chloride of sodium, three ounces; phosphate of soda, one ounce; carbonate of soda, one ounce and a half; sulphate of soda, half an ounce. This powder should be dissolved in water until the fluid has a specific gravity of 1030, and then heated to 98° F. It is then ready for injection into the blood. (Dr. G. O. Rees, p. 308.)

CHLOROFORM INHALATION.—Mr. G. H. Heath strongly recommends the inhalation of chloroform to keep the stomach quiet until some powerful anti-emetic medicine has had time to affect the system, and relates a case in which it appeared to be very effective. (p. 310.)

EXTERNAL STIMULANTS.—Mr. T. M. Greenhow recommends a plan of producing external stimulation, which, though not quite so formidable as the application of the actual cautery, and which he says is often resorted to in India, is yet a sufficiently formidable operation. It is a *brandy blister;* a linen rag dipped in brandy is applied to the abdomen and ignited, vesication may follow, though it does not invariably. If needful, repeat it; the part to which it is applied may be varied. (p. 311.)

COLD WATER AFFUSION, OR DOUCHE.—In India, in 1845, cholera was treated as follows. The patient was placed in a hip bath and water poured over him, while hospital attendants rubbed the limbs and trunk. This was continued until he shivered or felt chilly. He was then placed in bed and dry rubbed. If he relapsed, as they often do when the warmth of surface returns, the process was repeated. Generally the first operation was successful; it rarely needed beyond three or four repetitions. Little internal medicine is needed, except cold water. The beneficial effects of this douche plan are believed to arise from the stimulation given to the respiratory, and secondarily, thereby to the circulatory functions. The author of this paper considers the premonitory diarrhœa to be neither part nor parcel of the disease. (Mr. E. M. Macpherson, p. 311.)

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THE

RETROSPECT

OF

PRACTICAL MEDICINE AND SURGERY,

BEING

A Half-Yearly Journal,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

W. BRAITHWAITE,

LECTURER ON OBSTETRIC MEDICINE AT THE LEEDS SCHOOL OF MEDICINE, ETC.

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PRACTICAL MEDICINE.

&c., &c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

ART. 1.—ON FEVER.

By DR. WILLIAM STOKES, Regius Professor of Physic in the University of Dublin.

[The peculiarities of fever, as a disease, are of a negative kind: it is a disease which has no known or constant anatomical character, because even in the most marked cases of the disease, the patient may die, and yet the most skilful pathologist can detect no lesion or anatomical change in any of the structures of the body to explain the cause. Dr. Stokes remarks]

I believe that we may go thus far and say, that when the fatal diseases of the world are considered, the malady which destroys most men is a disease in which there is no anatomical character. You all naturally ask, "If this be so, how did the French school come to commit the extraordinary error of declaring that in every case of fever there was an anatomical character?" The reason is simply this, that they committed a great error in medical philosophy,—that of inferring the nature of a disease from the observation of its phenomena in one locality. Had Broussais and his followers studied fever in the wards of the Dublin hospitals, or had they gone abroad and examined fever in the West or in the East Indies, or on the coast of Africa, we should have heard nothing of the doctrine that fever was symptomatic of this or of that local disease.

We find, moreover, *that fever is a disease of periodicity*—that it runs a certain period, varying in different epidemics and different individual cases. We find, further, that it is a disease in which a double danger affects the patient. One of these dangers is, that of death from simple depression; for so far from fever being a disease of *plus* vitality, it is a disease of *minus* vitality—a general condition, if we may so speak, of *minus* vitality, which of itself is often quite sufficient to destroy life, and the patient may die, and very often does die of debility alone. The poison of fever has thus a directly depressing influence on the system. But there is another condition,—and this is what I wish to draw your attention to very strongly,—that, in the course of that special mode of life which we call fever, a liability exists to the production of secondary diseases. You will get a good general notion of this by considering the ordinary phenomena of a case of small-pox. The patient is taken ill; he has shivering, pain, fever, and he remains in this state for several days. And then we observe vesicles appearing on the surface, those vesicles filling with pus, afterwards drying, and then disappearing. No man will say, that the fever was symptomatic of the eruption. It is exactly the reverse; the eruption is the result of the fever. So it is with typhus. The local diseases are generated by the general. There is this difference, however, between what we term continued fever and the exanthemata: that while in the latter the local disease is almost always, but not necessarily always, accompanied by certain characters, as, for example, in variola there is a certain kind of eruption, in scarlatina and in measles a certain condition of the skin,—it is not so with respect to the secondary diseases of typhus. Now this is a most remarkable circumstance connected with continued fever, that the secondary diseases are inconstant. They are doubly inconstant, in their seat, and in their amount; and, in the same epidemic, we see the greatest possible varieties in the seat and in the amount of those secondary affections. However, between the exanthemata and typhus fever there is this point of resemblance, that the secondary affection is utterly incompetent to explain the general phenomena of the disease. So that we may say, with regard to the secondary affections in typhus fever, that they are inconstant

and incompetent to explain the disease. But they are of very great importance. It may be asked, what are those secondary diseases? are they inflammation? The present condition of medical science furnishes this answer;—they are not inflammation in a vast number of cases, when you consider them in their early stage, but in many instances, after they have existed in this non-inflammatory state for a certain time, there comes on a reactive irritation, and we have then a mixed condition. This is the history of the ulcerations of the intestine. In the beginning we find tumefaction and infiltration, but without any appearance whatsoever of inflammation. It has been proved, that in a vast number of cases the disease goes no further, and there is retrocession of the swelling and of the infiltration, just as we see retrocession of the eruption of small-pox; but, in others, the parts into which this typhoid matter has been infiltrated take on a reactive inflammation, and then we have a combination of the essential disease and of the local disease, which is now inflammatory, though it was not so at first. We shall have abundant opportunities of proving this.

The treatment of fever is reducible to a simple formula. We cannot cure fever: no man has ever cured fever. Fever in this sense may be called incurable, because we don't know how to cure it. It is, however, curable by itself. If you leave it to its own course, it will often cure itself. The great object, then, is to preserve the patient's life from the dangers which threaten him, pending the existence of that condition of fever—of this special state of life. If you can keep him alive to the fourteenth day, or the eighteenth day, or the twenty-first day, he will recover. What are the dangers that occur in these cases? One I have already pointed out to you —it is the danger of debility; the other is the danger arising from the accidental secondary affections. We cure the patient by preventing him from dying. We lead him on to that period when, by the extraordinary law of the disease, it will itself spontaneously terminate. We prevent him from dying of exhaustion, by food, by the use of stimulants, and by tonics. We save him from the danger which the local diseases may expose him to, by meeting them as early as we can discover them And herein lies the whole secret of the treatment of fever—to preserve the patient, at the least expense to his constitution, up to the time when, by the natural law, the disease will spontaneously subside.—*Med. Times and Gazette, Jan.* 21, 1854, *p.* 55.

[Dr. Stokes observed that since the period when he gave a systematic course on the subject of fever, his views on that disease had altered. He says:]

Although we formerly held that the local alterations were secondary to the fever —that they were really symtomatic of the fever, not the fever symtomatic of them, as Broussais taught—yet we did not sufficiently recognise the fact, that in most cases the inflammatory action associated with them was itself secondary to the local lesion—that it was reactive, and, as such, had less pathological value than the local change which preceded it.

Again, the opinions which were then inculcated as to the influence which the local diseases had in causing a fatal result must be in at least two respects modified. I formerly was of opinion that death in fever was mainly to be attributed to the virulence or number of the local diseases. Such is not my opinion now; for, although in examining the bodies of many patients who have died by fever, we find various local alterations, yet they are often insufficient to account for death. And we have had abundant proofs that the typhus state itself may cause death, without any manifest local disease in any part of the system.

In another, and seemingly opposite point of view, our opinions have changed. For I think, that so far at least as the lungs are concerned, we did not sufficiently estimate the danger produced by the local disease independent even of the re-active inflammation. To this point I shall hereafter draw your attention more fully. We too exclusively considered the local affections as inflammations, though secondary to the fever; and did not sufficiently admit them as special typhous lesions or deposits, which might occur without any inflammatory action, or precede it.

To sum up, then; whatever be the changes that may have occurred in my opinions about fever, they are rather developments of the doctrine formerly taught than its rejection, or the substitution of any essentially opposite view. In all point relating to the essentiality of fever, the influence which the law of periodicity exerts upon its phenomena, the secondary nature of its local affections, and, lastly, its contagious character, my views remain unchanged. But on those points to which I have already alluded, the alteration of our views is important as bearing on prac-

tice, inasmuch as it points more decidedly to the adoption of a treatment directed to the general more than the particular or local condition, and again to the more liberal employment of the tonic and stimulating treatment in the typhus of this country.

You will easily anticipate the general result of the views which I now attempt to teach you. They have led us to attach less importance than we did formerly to the inflammatory state in fever; that is, to the condition that indicates an antiphlogistic treatment in the ordinary sense of the word. In the use of stimulants we have become much more bold, even under a great variety of circumstances. But I must say, that with reference to the employment of wine in large quantities, we have been drawn to this mode of treatment less from any theory than from simple and accumulating experience, by which we became less and less timid in the use of stimulants. Observe here, how a truth in pathological anatomy may be foreshadowed or anticipated by observing the effect of a therapeutic agent.

[Diseases may be divided into three great classes. 1st, diseases having an anatomical character. 2nd, diseases having no anatomical character, but which are not fevers—these we class neuroses—such as mania, epilepsy, hysteria, chorea, &c. The 3rd class is fevers. We may ask, then, *how do fevers differ from neuroses?*]

Fever seems to be a special condition of life which is to exist for a certain time, and then to cease,—that is to say, it is under the law of periodicity; and in this respect the phenomena of fevers differ very much from those of the pure neuroses. There are other differences, too, between fevers and neuroses. It is quite true, that in a large number of fevers, death may take place without any organic change that we can demonstrate anatomically; but it is true, on the other hand, that, in a large number of cases, there is a tendency to the development of what I designate the secondary lesions of the disease. Thus, if we compare these two classes, the neuroses which are not fevers, and the fevers properly so called, we find this great difference, that among the former, as for example in hydrophobia, we do not see any tendency to the development of ulcers of the intestine; nor in epilepsy do we find any tendency to the development of bronchial diseases, nor in manin do we see a cutaneous eruption; nor in convulsions do we find any of these various organic changes produced. This tendency, then, to generate or produce local anatomical changes secondary to the fever is another remarkable distinction between this class of affections and the pure neuroses. There is a third very remarkable distinction between them. Fevers—using the term in a general sense, embracing a great number of diseases, as the exanthemata, typhus, plague, and yellow fever—are capable of being transmitted by contact or by vicinity, and a great many of them are contagious. So that in the law of their periodicity, in their liability to generate or produce various organic changes in different parts of the system, and in their transmissibility by contagion, we have three very important distinctive characters, although we cannot reduce them to an anatomical expression. A great deal has been written on the subject of the proximate cause of fever, and theory upon theory has been promulgated on this subject. We are, however, at this moment, just as ignorant of the proximate cause of fever, as we were in the time of Cullen, or even long before him. We do not know what the proximate cause of fever is; but if we look at the entire phenomena of fevers, and inquire what views we may safely hold at present for want of a better doctrine,—for it may be, that, in the progress of pathological science, the proximate cause of fever will be discovered; and it is quite possible, I might even say, probable,—when, I say, we deal with the expression of the actual state of our knowledge, we are justified in stating that fevers are the result of the introduction of a poison of some kind into the economy. The whole of the phenomena of poisoning by organic matters seem to point out a close analogy between fevers and those diseases in which a poison is introduced into the system. If a man who is in perfect health is exposed to the contagion of syphilis, in a short time his system becomes a laboratory for the formation of syphilitic poison, and he is capable of communicating the disease. As far as we can form a judgment in this question, we may say, that there is a very close analogy indeed between fevers and these diseases, whether they be fevers which are the result of contagion or not; and in this way we see a connecting link between fevers, which we call acute diseases, and diseases which are neither acute nor febrile. Thus, for example, we do not say that a patient who is labouring under syphilis, which he has caught by contagion, is in fever; but he is, nevertheless, under a condition, which, as far as the

chemico-vital state of his body is concerned, is somewhat analogous to fever, that is to say, his system has received a poison, and having received that poison, it seems to work upon it, or the poison to work on the system, and the result is, that the system becomes a generator of the same poison that it had received. Now, let us go a little further into this subject. I might give you various other illustrations; and, indeed, I think you will find, that some unexpected analogies will arise in this matter, and that you will even perceive an analogy between two such opposite diseases,—such dissimilar diseases as typhus fever and pulmonary consumption. For there can hardly be a doubt, that, under certain circumstances, tubercular matter introduced into the system acts like contagious matter, and that it produces a development of tubercular disease in the system thus infected. Such cases, then, may be considered as examples, if you will, of very chronic fevers, long-continued fevers, and fevers which are not, apparently at least, under the influence of the law of periodicity. I am perfectly persuaded, that the more we study that class of diseases, which seems to be general rather than local, we shall find that the possibility of contagion will be more and more exhibited. I am strongly of opinion, that almost all the febrile diseases are contagious—that is the essentially febrile diseases—and I think it certain that there are other diseases, also, which we do not call fevers, that are contagious. It is hardly possible to doubt the contageousness of cholera; and we may go still further, and extend the possibility of contagiousness even to such diseases as tubercular affections, and perhaps even further.

Now, let us examine what are termed the Exanthemata, Measles, Scarlatina, and Small-pox. These diseases are, in all essential conditions, fevers. An individual in perfect health is exposed to a certain exciting cause, and he gets a general illness, which exhibits phenomena referrible to the law of periodicity. How do these diseases differ from typhus fever? They seem to differ in this, that their local phenomena are more constant, and that they are probably more uniformly contagious. The contagion of small-pox, of scarlatina, and of measles is a recognized and established doctrine.

We know that scarlatina is generally constant in its phenomena,—that measles is constant in its phenomena,—that small-pox is constant in its phenomena, and especially in the phenomena of its secondary change,—so much so, that the secondary change is taken as a distinctive mark of the disease. These affections are probably, as I said before, more directly contagious; and this, perhaps, may arise from the circumstance, that the matter of contagion, in these cases, is more elaborated,——is perhaps more perfect; and the person who contracts the disease is very much in the same position as a person who contracts syphilis; that is to say, that an organic poison of a special kind, whose essential characters, however, are so subtle as to escape chemical investigation, has been presented to his system, and has affected him. The phenomena of continued fever are more variable; and this may arise from the want of constancy in the exciting cause. We hardly suppose a man to get small-pox unless he has been infected by another who has had small-pox. But continued fever, or typhus fever, seems capable of being produced by a great number of causes—or, if I may so speak, by a number of imperfectly-developed or imperfectly-acting causes, and these, of course, may be infinitely various. We also see this very curious difference between typhus fever and the exanthemata,—that while, among the exanthemata, the one exciting cause always produces its own peculiar disease, the exciting cause of small-pox producing small-pox, the exciting cause of scarlatina producing scarlatina, the exciting cause of measles producing measles,—this does not seem to be the case with respect to fever. For here is one of the most important and interesting facts connected with the entire subject, that the same exciting cause—at least as far as we can see of it—is capable of producing different kinds of fever in different persons. This great fact has not been sufficiently dwelt on by the various writers on fever, on the Continent and in England, especially by that class of men whose object seems to have been to make themselves classifiers of diseases,—makers of classifications,—at which nature laughs.

Here is another of the great facts which show the impropriety of attempting to draw lines of distinction between what are termed the *typhus* fevers and the *typhoid* fevers—that the one exciting cause will in various persons produce the two diseases. Now, we see nothing of this sort in the exanthemata. What may be the reason of *this it* is difficult to say; and we explain it very often by expressing the fact in dif-

ferent words. It is supposed that it may be due to some variation in the state of *receptivity* of the body at the time. For, in the production of the effect of the poison, there are two elements ; first, the nature and composition of the poison which is to act; and, next, the chemico-vital state of the body which is to be acted on. The two causes combined produce the result—fever. But if, the cause being the same, the bodies be in different states, we may expect different kinds of fevers ; and this is all that we can say on the subject.—*Med. Times and Gazette, March* 11, 1854, *p.* 229.

[When fever of a typhus character is present, Dr. Stokes shows how important it is to avoid the depleting, and to apply the stimulating treatment, even although the symptoms may lead the inexperienced practitioner to suppose that true inflammation is present. This opinion he particularly dwells upon when he comes to the subject of the *local symptoms of fever.* These local symptoms of fever may be divided into several classes. 1st, neurotic or nervous affections—as when we have delirium, convulsions, coma. 2nd, when some anatomical change is produced in the brain, heart, spleen, glands of the intestines, or lungs, &c. But Dr. Stokes' most valuable remarks are when he treats of the 3rd class. He says :]

The third class of local affections in fever, is a very curious and important one. The condition of the parts here is, as it were, a compound condition. The organ is supposed to have suffered infiltration of what is termed the typhoid matter ; it has become swollen and enlarged. This is a condition which is capable of retrocession, without any consequent injury to the part ; but in certain cases this retrocession does not take place, or it is interrupted by actual inflammation of the tissues which are thus infiltrated. Thus, we have three very important classes of local affections which, though organic at first, are not inflammatory, but which become complicated with a secondary or re-active inflammation. There is, I believe, a fourth set of local symptoms, or of local affections, if you will, in fever, which has not, perhaps, received sufficient attention. I think it is extremely likely, that, in certain cases, we have organs suffering from want of a natural supply of blood; and that this is extremely likely to take place as far as the nervous system, at all events, is concerned. Any of you that have turned your attention to the subject of the fatty degeneration of the heart,—so often brought before the Pathological Society of Dublin,—will recollect, that one of the most remarkable symptoms of this affection is, that the patient is liable to repeated and extraordinary attacks of nervous disease ; and nervous disease shown by frequent attacks of syncope, or by apoplectic attacks continually repeated, very often without consequent paralysis, but in some cases with paralysis. This is an illustration of the development of extremely important nervous symptoms, not from fulness or congestion of the brain, but from an anemia of the brain ; and it illustrates the great pathological proposition—it is one of many illustrations of it—that similar symptoms, or nearly similar symptoms, may arise from essentially opposite conditions. We know that apoplexy and paralysis frequently arise from hemorrhage into the brain; we find that they also arise from anemia of the brain. In the disease to which I so long directed the attention of the classes in this Hospital—the typhoid softening of the heart—there is a great probability, indeed, that the brain, under those circumstances, suffers from anemia ; and it may be—though this is a point which has not been at all sufficiently worked out—that many of the extraordinary nervous symptoms in fever, to which we can assign no anatomical cause, really proceed from an anemic condition of the brain, the result of a temporary softening or weakening of the left ventricle; in fact, that in typhoid fever there is produced, for a certain number of days, the condition which is seen as a chronic state in the fatty degeneration of the heart. It requires very little acumen to perceive, that if the brain is liable to this fourth and curious set of local disturbances, other organs may suffer in the same way. This is a subject which at present is by no means worked out. I merely throw it out for your consideration. But we might inquire, whether the tolerance of wine in typhus is in any way to be explained by an anemic state of the brain. There are few things more curious than the power which is shown by patients in typhus, of bearing a quantity of wine or brandy without intoxication. They will often swallow many times more wine than would make them quite drunk if they had not typhus: and wine becomes a sedative, rather than a stimulant, so far as symptoms are concerned. Does not this indicate a state of the brain

the opposite, in some respects, to that of health? I do not want you to believe that all the good effect by wine is derived from its action on the weakened heart; for it may be, that the direct influence of the stimulant itself on the nervous matter may be a cause; but, whether we take in one or both modes of action, its effect indicates a condition of the circulating and nervous systems the opposite to that of inflammation, as we understand the term.

We come now to announce this very important proposition, that the condition of fever, or, if you will, the poison of fever, is capable of producing local symptoms without organic change. We can understand the poison of fever producing a general fever without any local symptoms: that is easy enough to be understood; but it requires a good deal of teaching and observation to persuade men that the poison of fever is capable of producing local symptoms without any organic change. It is quite impossible to exaggerate the importance of this proposition as a guide in the practice of medicine, for it is because this proposition has not been sufficiently accepted,—because it has not been engraved sufficiently upon the minds of the medical and surgical students, that so much mischief is done in the treatment of fever. There is one grand rule, and, if you did nothing else for the whole of the session but learn it, your time would be well spent,—and it is this, that those rules of local disease which are to be accepted as true in cases which are not typhus fever, lose their value to a great degree when the disease is typhus fever. This applies to the local symptoms in connexion with the great cavities. You are not to apply the rules of diagnosis, drawn from the observation of diseases which are not fever, to the symptoms in fever, because fever is a special, essential state, and has its own conditions and its own rules. And this confirms the observation which I made in the introductory lecture, that the student, no matter how extensive his education may have been in surgery and in medicine outside a fever hospital, has really only learned half his business if he has not studied fever at the bedside. In consequence of ignorance of this rule, men having a case of fever, with symptoms which, they had been led to believe, in cases not fever, were indicative of local inflammation, at once proceeded to treat the case as one of local inflammation.

The patient on the 10th or 12th day of typhus fever is watchful, delirious, violent, complains of great distress in his head, and so on. Well, what does the practitioner do, who has not learned this rule? He shaves the head; he applies ice to it; puts on a dozen or two of leeches, and what is the result? The result too frequently is, that the patient dies rapidly. The symptoms in this case were not the result of inflammation of the brain; they were not the result of hyperemia of the brain. There was, perhaps, an exactly opposite state: at all events it was not such as to require depletion; the patient was suffering under general debility, and he sinks under the doctor. This is still a common case. I have seen applications of leeches to the head in an advanced stage of fever with delirium, almost as certainly fatal as a pistol-shot through the brain would be. Here let me give the observations of Louis, illustrative of the actual value of the symptom of delirium, as an indication of inflammation of the brain in fever; and I may mention here, that as Louis' observations were drawn from the Continental typhoid fever, they must be considered as still more applicable to our disease; because, in the Continental typhoid fever, there seems to be a greater probability that the local symptom shall be connected, or is really connected with local irritation than it is here. He took, in the first place, twelve fatal cases of typhoid fever, which did not present the symptom of delirium. In four of these cases he found redness of the brain, in six the brain was perfectly healthy, and in two there was slight softening of the brain. Now, let us take his twelve other cases, in which delirium was an extremely prominent symptom. In many of them the patients were violently delirious. In five of these cases there was redness of the brain, in five the brain was perfectly healthy, in one there was slight softening, and in one slight injection. Now, compare these two sets of results, and see how extremely similar they are. Where there was no delirium four patients presented redness of the brain; where there was delirium five presented redness of the brain. Where there was no delirium six presented the brain perfectly healthy; where there was violent delirium five presented the brain perfectly healthy. The other cases may go for nothing. This result is extremely valuable indeed, as showing how very little we can depend upon the symptoms of excitement of the brain, as an indication *of organic disease* when the patient is in fever.

Now, let us go to some other organ,—take the heart. "Well," you will say, "the heart need not be taken, because in most of our cases the heart shows a depressed state, and not an irritated state." But there are many cases of fever in which the heart is violently excited, as you will have frequent occasion to see. What is the result of dissection in those cases of excited heart in fever? There are two conditions which, according to ordinarily received notions, should lead you to expect irritation or inflammation of an organ: first, that the patient has fever, and next that you have an organ in a state of great excitement. If the patient had not typhus fever, but had fever which was not typhus, and an excited organ, the chance would be, that that organ would be found in a condition of inflammation. If a man has fever which is not typhus fever, and his lungs are excited, we find bronchitis or pneumonia; if his pleura is excited, we find pleuritis, and so on. But here is a case of typhus fever, with extraordinary excitement of the organ, and when you come to dissect the parts you find the heart perfectly healthy,—not the slightest sign of disease is found; and the same observation will frequently apply to the digestive system. You will have tenderness on pressure of the abdomen, extreme thirst, nausea, and vomiting. Yet, on dissection, the mucous membrane will be found pale, and there will be no sign of disease. If a patient who had not typhus fever had a red tongue, or a dry and cracked tongue; if he had thirst, if he had vomiting and tender epigastrium, every one would say, this patient has gastritis, and, in all probability, he would have gastritis. But in fever, the state of the tongue is no sign whatsoever of gastritis; for each of you who has worked in the fever wards here must have seen that we are totally regardless of the condition of the tongue in the administration of the most powerful stimulants; and we find that one of the best modes of removing the redness of the tongue in fever is to give hot brandy, or large quantities of wine, or such stimulants as bark and ammonia.

Again, take the eye. Delirium ferox with an injected eye is the expression of inflammation of the brain where the patient has not typhus fever. But take a case of fever, and is the injected eye a sign of cerebritis? Certainly not. It is merely to be looked upon in the same way as the tongue—it is a local affection under the dominion of the general disease. The truth is, that disease of a true inflammatory character is the rarest thing possible in fever; it is so rare, that some do not believe that it ever occurs. Apply this axiom, then, to treatment, and see what becomes of that doctrine which advocates bleeding in fever, which advocates starvation and purging in fever, which forbids the use of wine, and other stimulants. There is another very important view or argument to be referred to here, which all practical men will understand. If fever was a group of inflammations, or if it was symptomatic of any one inflammation; in other words, if it was an inflammatory disease, we ought to expect that in the larger number of patients who had gone through the process of fever, chronic diseases of organs would be developed. If a patient has acute rheumatism, we find that his heart may become engaged. He recovers from the rheumatism, and then he has progressive organic disease of his heart. When you reflect upon the extent of fever, the great number of persons that have been at some time in their lives attacked with fever, you should at once come to the conclusion, that if those fevers were examples of groups of local inflammations, we should have a much greater quantity of organic local diseases consequent upon them: but what is the fact? The fact is, that such accidents are extremely rare. How few cases can be adduced of confirmed mania as a consequence of fever! How few cases can be adduced of paralysis, of apoplexy, or of hydrocephalus, as a consequence of fever! Surely, if in this enormous number of cases of fever with violent head symptoms, there had been inflammation of the brain, in some of them, at all events, we should have, as a consequence, progressive disorganization of the part. Again, take the thorax. How few instances are there on record of chronic progressive pneumonia after fever; how few of chronic pleuritis; how few cases of atrophy of the lung; how few cases of anatomical changes which end in progressive organic disease, which has started from an inflammatory disease that took its origin pending a fever! Go to the heart. We have two classes of heart affections in fever: one, a softening and weakening of the heart; and the other, an excitement of the heart. I don't care which of them you take. Do we find that, after a recovery from fever, in persons who have had either of those affections of the heart

during the fever, there is a liability to valvular disease,—that there is a liability to hypertrophy of the heart,—that there is an adhesion of the pericardium? Nothing of the kind results. The fact is, that those organs have never been in a state of inflammation. They have suffered pending the fever, and, the fever having left them, the parts are restored to their normal condition. This is a very important consideration, and you may extend it still further. If fever were an inflammation of the blood-vessels, it is not to be supposed but that we should have many cases of disease of the aorta in the thousands of persons who have gone through fever. Yet we find no such results. If you go to the digestive system (and this is, perhaps, the system, of all others, which is the most liable to organic change,—at least in the Continental fevers), take the peritoneum. How few cases do we find—or have we any case to show—of chronic peritonitis, as the result of the typhus fever? Not one that I know or ever read of; and yet the patient may have had symptoms of severe irritation of the abdomen pending his fever. In fact, all that we know of disease of the peritoneum, in connexion with fever, is simply, that, in certain cases of ulceration of the intestine, a solution of continuity of the peritoneum takes place, and the fæcal matter is effused into the cavity, and the patient dies of acute peritonitis. But that does not touch my argument. Where are the cases of chronic disease of the liver springing out of typhus fever? It has been long a portion of medical doctrine—it has become a traditional doctrine—and everything that is traditional in medicine is to be respected,—that fever has a depuratory effect on the system. Now, whether it has a depuratory effect or not, we shall not here inquire; but the very fact of the existence of that doctrine, which is much older than pathological anatomy, implies, at all events, a very general belief that fever does not damage organs; for, if it did damage the various organs that exhibit local symptoms in the course of the affection, we should not have the doctrine established of its having a depuratory effect .The cases of the establishment of the chronic ulcerative condition of the intestinal tube might be adduced in opposition to these views, but I do not place much weight upon them. We may divide them into two classes; in the one, diarrhœa, or some other symptom, is established during the fever, which latter runs on indefinitely—here the typhoid disease of the mucous glands has been attended with reactive irritation, and this has interfered with the action of the law of periodicity—so that the fever runs on indefinitely. In the next case, the fever may be supposed to have ceased, but so much disorganization has occurred, that the ulcerative process seems to go on as it might be supposed to do in another case where no typhus had preceded it. The cases related by Dr. Cheyne, in the first and second volumes of the "Dublin Hospital Reports," appear to be examples of these forms of disease.—*Medical Times and Gazette, April*, 1854, *p.* 339.

2.—ON THE PROPHYLACTIC INFLUENCE OF QUININE IN FEVER.

By Dr. Alexander Bryson, R.N.

[It has long been a standing rule in the navy for the surgeon, if he deem it advisable, to allow to every one going on shore in tropical climates, a certain quantity of quinine in wine, or spirits, as the case may be. This rule has not been strictly adhered to, because in some cases it seemed to have no effect; but, says Dr. Bryson,]

Convinced that the preventive influence of bark and quinine had never been fairly tried, in drawing up a Report on the African station, in 1847, I suggested that the latter should be given, not exactly on a different plan, though with a somewhat different object in view. Up to that period, bark had been used only during the time the men were exposed on shore, or while absent in boats near swampy places, and, as I have understood, for the purpose of acting as a tonic, and thereby protecting the system against the influence of fever-exciting miasmata. Immediately after they returned on board, the bark was discontinued. This was evidently wrong; for, although we know that both bark and quinine will prevent the occurrence of aguish paroxysms, and probably prevent the evolution of remitting fever, still we do not know, nor have we any reason to believe, that they have any effect whatever in preventing the peculiar exciting cause,—or, to use the more familiar phraseology, the morbific germs of the disease,—from entering the system, or that they have any

permanent neutralising power over them after they have entered it. It was therefore clear that when the influence of the bark or quinine so administered had ceased, the evolution of the fever might take place at any time within twenty days from the day the persons were last exposed on shore, or to miasmata productive of fever, though in nine cases out of ten the incubative period does not exceed fifteen, sixteen, or seventeen days. Up to the fourteenth, however, the disease may occur with as much force as on any intermediate day from the first; but after that, if developed at all, it is seldom that the fever either runs high or lasts long. With the most perfect faith in the preventive influence of quinine, and trusting to its well-known antagonism to the recurrence of periodic diseases, in the above-mentioned report I suggested that "quinine being less nauseous than bark, and therefore less likely to be refused by seamen, it should be used as a prophylactic instead of the latter, and that its use should be continued, not only while the men were exposed in unhealthy localities, but *for at least fourteen days after they returned on board*, in order that the antagonistic influence of the medicine might be kept up until the incubative period of the disease had expired. The suggestion was adopted, and the results, upon the whole, are most satisfactory.

A strong, spirituous solution of amorphous quinine was mixed with several pipes of wine, in the proportion of four grains of the salt to an ounce of the wine; a number of cases, or boxes, were then made, capable of holding a certain number of bottles; these, being filled with medicated wine, one or two boxes, according to the size of the vessel, were supplied to each cruizer employed on the African station. The object in supplying the cruizers with medicated wine-chests was, that they might at all times be ready and at hand to put into boats suddenly required to proceed on detached service. Thus the quinine,—which, when carried in paper, or bottles, was not only apt to be lost or blown away, but had to be given in uncertain doses, and therefore could not be husbanded—was secured, and the wine was effectually destroyed for any other purpose. Instructions for the administration of the wine according to the above plan were placed in each box, and the medical officers were requested to note and report on its effects. The following extracts will show the estimation in which it is held by the medical officers on the African station:—

"I found bark and rum given to the men going away on duty of the greatest benefit; but, from the bulk of the bark, and the small quantity of the rum, if the men were not watched closely they would not take the draught at all. All that could be desired is now obtained in the medicated wine."

"Eighteen men were detached in the pinnace and whaler to cruise off Banda Point and Mayamba Bay, in the months of February and March. They were absent for twenty-four days. I directed an ounce of quinine wine to be given daily to each person, and it is satisfactory to state that no sickness whatever occurred."

"Two boats' crews have been constantly on detached service, close in shore, where the effluvium, wafted from the land by the morning breeze, is very offensive, and highly pregnant with the odour of decomposing vegetable matter. The immunity from disease of those engaged in this service, I attribute chiefly to the regular use of quinine wine and bark together with protection by good awnings."

"The boats remained in the Pongas one night, and the crews—officers and men amounting to twenty-four in number,—were exposed to the sun the greater part of two days. Quinine wine was given in ounce doses for eight days afterwards, and I attribute the exemption of the greater part of the people from fever to its use."

It may be stated, that these extracts afford no proof of the preventive influence either of bark or quinine beyond the opinion expressed by the several reporters; but when taken in connexion with those which follow they appear in a different light, and form a kind of presumptive evidence which cannot well be rejected.

"During the time the boats were up the Scarcies, I gave an ounce of the solution of quinine to each man daily, and continued it for ten days afterwards; and although the rains were commencing, and the men were often wetted through, I had not a case of illness."

"The boats were frequently away cruising in the mouths of the rivers, or else blockading the coast between Delagoa Bay and Mozambique. I had frequent opportunities of observing the prophylactic effect of the quinine wine. In only one instance did fever follow its use, and that was of a mild character. This contrasts strongly with the seizure of a whole boat's crew with fever in March, 1851, when

no wine was administered, as it was lost in crossing the bar of the river. The men greatly prefer it to the bark."

"The gig was detached in the Boom-kittam; quinine wine in the usual dose, was given night and morning, and continued for fourteen days after its return. A boy (William Roberts,) from dislike to the quinine, took at most but three doses. He was the only one of the boat's crew that suffered from fever, which occurred ten days after leaving the river."

"While coaling at Sierra Leone, the weather was very wet, and on their several duties both men and officers were unavoidably much exposed to the rain. An extra allowance of grog and quinine was given to each man, and continued afterwards for a day or two to such as seemed to require it. Mr. ——, however, placed no faith in its preventive influence, and would not take it, and he alone suffered an attack of fever, which proved fatal."

"A boat's crew, belonging to the Pluto, were employed for twenty-five days up the Congo. The wine was regularly supplied, but it caused one of the men to vomit, and therefore he discontinued its use; he was the first to suffer from fever. Only one other case occurred among the crew."

"During our stay in the river Lagos quinine wine was regularly offered to the men morning and evening,—all took it, I believe, except two midshipmen and two seamen belonging to the galley. These four persons subsequently each suffered a severe attack of fever." While in the whole force, consisting of upwards of 220 men, there occurred only a few other cases of trifling importance.

"When in the river Lagos the men had more than an ounce of quinine wine morning and evening, and not a case of fever occurred, though the vessel was nine days in the river."

"Thirty-six men belonging to the Water Witch were employed at the attack on Lagos; they were in the river four or five days, and, with the exception of three, all took quinine wine while there, and for fourteen days after they left it. Of the whole number, five only were attacked with fever, namely, the three men who did not take the wine, and other two, who most imprudently exposed themselves to the sun, and bathed while much heated by violent exercise."

"On the morning of the 25th of November, seventy-seven men from this ship went up the river Lagos, to attack the town. Before starting, every officer and man was ordered to take a glass of quinine wine; and a sufficient quantity was put into the boats to repeat the same at night. All, to the best of my knowledge, took it, with the exception of Mr. D., master's assistant, who rather plumed himself on having escaped *taking a dose of physic*. This young gentleman, on the 10th of December, just a fortnight after, was seized with a violent attack of remittent fever; and of the whole number who entered the river, he is the only one who, up to this date (the 7th of Jan.) has been attacked.—*Med. Times and Gazette, Jan.* 7, 1854, *p.* 6.

3.—ON THE TREATMENT OF FEVER, AS ILLUSTRATED BY ABOUT 80 CASES IN THE ROYAL FREE HOSPITAL.

By Dr. William Brinton, Senior Physician to the Hospital.

[These cases have extended over a period of twenty months, and in this paper Dr. Brinton gives the chief points worthy of remark, and endeavours to connect the pathology with the rational and successful treatment employed. Of seventy-seven of the cases grouped as fever, forty-six were typhoid, and two mild typhus. Dr. Brinton then proceeds to say:]

It is hardly necessary for me to dilate upon the marked contrast of symptoms upon which this diagnosis was generally based. In most instances of but moderately severe fever it is scarcely too much to say that the distinction between typhus and typhoid is ultimately as evident as that between measles and scarlatina. Two symptoms alone would often suffice to distinguish them from each other—the character of the rash on the skin, and the presence or absence of the signs of ulceration in the bowels. Thus in typhoid, the eruption appears late, has a rose colour, is thinly scattered, and fading in one place, gradually gives way to a new and equally sparing crop elsewhere: and ulceration of the solitary and agminate follicles is invariably pre-

sent. While in typhus, the rash is a single, thick eruption, of a darker colour, coming out at the beginning of the second week, and gradually fading, without replacement by a fresh crop.

It is impossible to avoid seeing that such a contrast is a very strong argument for the real distinctness of the two diseases. To say nothing of this vast difference in the eruption, let any one figure to himself two maladies, which, though attended by constitutional symptoms common to themselves and to various other complaints, differed in the fact, that a particular set of cutaneous glands in a specific region—such as the convolute glands of the axilla—did and did not suppurate and ulcerate in the two respectively. Or let him imagine two kinds of plague, one with, and one without, axillary buboes. Surely he would call these two distinct diseases. And yet neither of these imaginary contrasts would be one whit more remarkable than that which really exists in the typhoid and typhus fevers. Nor does morbid anatomy ever sustain a more direct or faithful relation to pathology than where, as in this instance, it reveals a characteristic lesion, the mere sight of which would generally cause it to elude a superficial inspection.

But although these two symptoms often decide the nature of any particular case, still they are frequently insufficient to establish what may be called an useful diagnosis—I mean such an early diagnosis as is almost necessary to the proper treatment of these diseases. Here, as elsewhere, though a slight symptom, or hasty glance at a case, will often betray its nature to a practised observer—just as in out-patient practice the twitch of a nostril sometimes puts us on the track of thoracic mischief, or the aspect of the skin warns us to expect renal disease—still a satisfactory diagnosis demands the condensation into one focus of all the light that various circumstances can throw upon it. The rash alone often fails us: and before the end of the first week, is absent from even the typhus fever. And a great many of the milder cases of both forms, especially of such as occur in young and well-nourished subjects (where the fever often seems to be eliminated by critical sweats), never exhibit any rash at all. Again, in many of these patients the typhoid eruption is represented by one or two scattered spots, which few but those very familiar with the disease would like to accept as its pathognomonic marks. In similar subjects the rash of typhus is often equally indistinct, appearing as an indistinct mottling, that can only be seen in a good light, or in some particular position of the surface it occupies. But even in the absence of all distinct eruption, the hue of the skin will often distinguish the case. For before the appearance of the rubeoloid spots, the skin of the typhus patient sometimes exhibits an amount of dusky redness and turgor, which can scarcely be mistaken for the limited, feverous flush on the face of the typhoid patient,—contrasted, as the latter generally is, by a peculiarly white and velvety character of the skin covering the surface of the body between the scattered rose-coloured spots.

The evidence afforded by the state of the bowels is equally late and uncertain, not to say unsatisfactory. For though, as regards the earlier stages of typhus and typhoid, it may be laid down that constipation is certainly the rule in the former disease, and the exception in the latter; yet, on the other hand, not only does this law often fail to apply, but there are many cases of typhoid where purging is absent throughout; and, conversely, of typhus where violent diarrhœa is added to the abdominal symptoms of tympanites and pain so common in very severe cases. Thus, out of the nineteen cases of typhus alluded to, three were fatal, and each of these had been preceded by diarrhœa of considerable severity. But in all three the intestines were both predicted and found to be free from any structural lesion. It seems not improbable that such diarrhœa is essentially nervous, being an indirect result of the cerebral disturbance which had caused death. While upon this topic I may mention that several examinations of typhoid subjects lead me to think that excessive frequency of the purging in this disease is connected with an extension of ulceration to the solitary follicles of the large intestine, rather than to its spread in the ileum itself;—a fact that confirms the truth of a valuable remark which we owe to Dr. Baly, as to the prominent share taken by the first of these parts of the alimentary canal in severe diarrhœa generally.

Dismissing a variety of minor aids to diagnosis which but rarely come into use, such as the mere length of the attack, the peculiar odour of the sweat and other secretions, I may allude to one which would almost have enabled me to name every

one of the entire group of seventy-seven cases. This is the remarkable manner in which the physiognomy of the two diseases is, as it were, intensified, when seen in a number of cases that affect the epidemic form. Thus, during the earlier part of the period I have mentioned, almost all the cases were typhoid; while, latterly, I have scarce treated any but typhus. In both these groups the slighter diagnostic marks of colour and appearance became so evident when compared in several instances lying side by side, that many of the cases in which the rash was but ill-marked could be identified at once; while even where it was quite absent there was little difficulty in coming to a probable conjecture. And happily most of the cases where diagnosis is thus doubtful, only require a very uniform and simple treatment.

Before passing on to describe the remedies pursued, I may briefly diverge to two points connected with the pathology of fever. The first is, the date from which we ought to fix the access of the disease, a circumstance of some importance in estimating the length of the attack. Thus it is quite useless to accept the statements of the patients themselves, who, if of the poorer classes, will sometimes continue at work long after the appearance of even the graver symptoms, and if among the affluent, are often "laid up" by those premonitory to the disorder itself. It is evident we want some more trustworthy symptom than one which is often regulated by the mere necessity or power of endurance—a symptom which shall be at once of marked character, and not too long duration. Such a symptom is afforded by the first onset of shivering and pain in the back. It is so characteristic, that there are very few patients who do not both notice it at the time, and remember it afterwards; and as it rarely lasts more than two or three days, it affords a date the average errors of which are scarcely more than twenty-four hours either way.

The next point is one which concerns the question as to whether typhoid and typhus are varieties of one fever or two specific diseases. Distinct as they are in most of their characters,—such as duration, symptoms, anatomy, and geographical distribution,—it is probable that many still doubt whether they are not essentially one and the same malady. The doubt ought I think to be small, although at present we are perhaps bound to remember it. It is obvious that a decision will rest mainly upon the answer given to two questions. (First.) Does each of these propagate itself, and never the other? (Secondly.) Does the imperfect protection which each appears to afford its subject against a future attack, only apply to itself, or does it extend to the other disease? To the first question we can hardly expect a very satisfactory affirmative, so numerous are the channels of contagion which remain open to the most secluded individuals. But as regards the second, if, in deference to many of the best authorities, we assume this protection, it would probably not be difficult to get better information. The kind of information wanted, I may illustrate by the statement of a man whom I treated for unmistakable typhoid, and who assured me that he had had a fever which his surgeon called typhus about six months before. More trustworthy instances of this kind would be very valuable.—*Lancet*, *Dec.* 17, 1853, *p.* 568.

[Where Dr. Brinton sees the patient in the early stage he follows the old plan, first giving an emetic. He says:]

The following were the reasons which induced me to do so. Whatever view we may take of the nature of the fever poison, and of the mode in which it reproduces itself in the fluids or solids of the organism it attacks, we have good grounds for conjecturing that it is really removed and eliminated from the system by the various secretions and exhalations of the body;—which latter thus contribute (at least indirectly, and perhaps directly) to the arrest of the disease. Now it seems to me that we can scarcely accept this view without admitting another proposition as a corollary to it—namely, that when the chief stress of the symptoms falls on any particular glandular surface, causing the increased flow of a more or less perfect secretion from it, this action represents a determination of the poison thither, and an effort of nature towards the elimination thence. And hence, where the secreting surface is one not easily disorganized, and amenable to the influence of drugs, it is important to try whether stimulating it to increased action will not help to eliminate the poison, and thus to mitigate the disease. Indeed as respects the skin, some such view as this appears to be commonly entertained and acted upon, both in this and other disorders, where a spontaneous local determination is often aided and increased by

diaphoretics, to the great benefit of the patient. And it is probable that we may extend this view to the stomach. For the vomiting of all the exanthemata is so specific in its date and characters, as evidently to have some direct connexion with the disease—a connexion not unlikely to be that of elimination just mentioned. And as regards the action of emetics, I may add that I have been able to establish a point of great interest and importance, explanatory of their value, not only in this, but in other disorders. On injecting a solution of tartar-emetic into the veins of a dog, this mineral was shortly afterwards found occupying the fluid contents of the animal's stomach, in a state of concentration for exceeding that in which it must have been mixed with the mass of the blood. So that it would appear, that whatever the share taken by the stomach itself in the vomiting, this act will at least fulfil the object of removing the drug from the system. And presuming that during the early stage of fever the poison of this disease also selects the gastric mucous membrane as its especial channel of outlet, we may easily imagine how the administration of an energetic vomit like tartar-emetic or ipecacuan can aid the exit of the poison, and thus mitigate the worst symptoms of the disease.

But of course, whatever may be the correct theory of the action of emetics, their remedial value in fever can only be determined by experience. And without collecting the evidence on this head which is doubtless scatteredin the works of various medical authors both ancient and modern, I may state that in many of these cases I had reason to believe them of great value. They frequently afforded almost immediate relief to the distressing headache and depression which had marked the access of the disease; and were followed by a fever of unusually light character. It is true that I can scarcely say that one or two of these cases might not have gone on as favourably even had no emetics been given. But some of them appeared to be very heavy attacks of an unusually grave epidemic. And in one instance of this kind their efficacy could scarcely be questioned. A girl of 17 was brought into the hospital, suffering under premonitory symptoms of great severity and of several days' duration: the rigors were just commencing; the pain in the head was violent, the skin dry and burning, the pulse 130 per minute, and the whole aspect such as generally ushers in the worst cases of fever. She was one of a family of five, four of whom had typhoid—three severely, and one fatally. The administration of an emetic was soon followed by vomiting, and so much relief was then experienced, that on a subsequent return of the severe symptoms, I was induced to repeat it. After a third emetic, the relief was comparatively permanent, so that she remained without a single dangerous symptom for about ten days, when the diarrhœa of the intestinal ulceration set in. During this period I treated her like other mild cases uncomplicated with cerebral disturbance—namely, with gentle diaphoretics, such as small doses of Dover's powder nightly, and acetate of ammonia. The diarrhœa threatening to become excessive, was controlled by enemata; and a little bronchitis then required attention. Towards the beginning of the fourth week, she was able to begin taking the decoction of bark; in another week this was exchanged for quina and iron; and finally, at the end of the fifth week, she was discharged quite cured. And in one or two cases where the same plan was adopted at an equally early date, the symptoms were altogether cut short; and were followed by a convalescence so rapid that I was inclined to doubt the accuracy of my previous diagnosis, and regard them as instances of *febricula*; although not only had they had all the aspects of the prevailing epidemic, but one of them had occurred in a hospital nurse, under circumstances which led me to believe that she had contracted the disease by contagion in the discharge of her duties.

The emetic I have given has usually been the wine of ipecacuan in doses of one fluid ounce; this drug being more safe and manageable than tartar-emetic, and the wine being less liable to adulteration than the powder, as well as in a better form for rapid and efficient absorption. As regards the date of the disorder at which the emetics ought to be administered, their efficacy seems to have an intimate relation with the prevalence of the nausea which characterises the onset of the disease. After this symptom has once subsided, as it generally does about the middle of the first week, they seem to be of very little use; on the contrary, they occasionally mystify the physician, by causing a purging which, in the case of typhoid, may at least obscure the symptomatic diarrhœa, if not provoke its occurrence.

In considering the treatment of fever during its later stages, I need scarcely offer

any apology for connecting it with a few observations on the dates and causes of death. Whatever the difference in the maximum mortality of typhoid and typhus, we should scarcely do wrong to regard the danger in both diseases as rising steadily up to the end of the second week. Soon after this date the fatality of typhus seems to reach its maximum; while that of typhoid, which has hitherto been somewhat less than its kindred disease, goes on increasing for at least a week or longer. The declining mortality which succeeds the maximum of each is contributed to by a variety of what may almost be called accidents of the disorder—such as hemorrhage, abscesses, erysipelas, and the like. But what are the specific causes of this graduated mortality?—And how are they related to these dates? To answer these questions in any satisfactory manner would imply the solution of a still more difficult problem—namely, the nature of fever itself.

It would lead me too far from the objects of this paper to enter on the discussion of so large a question as the latter of these three. As regards the two former, I would offer the following statement as the answer which appears to be most consonant with experience, and most useful in practice:—

1. In a certain class of cases, happily of rare occurrence, the patient falls a victim to the disorder at its very outset. Prostrate and collapsed, without very intense febrile symptoms, he seems to die from the mere shock of its attack. In these instances we are justified in conjecturing that the patient succumbs to the action of the poison which circulates in his blood. They are the analogues of the similar but more frequent deaths seen in the beginning of scarlatina, yellow fever, small-pox, and other acute febrile disorders.

2. The mortality from the preceding cause soon merges into another of far more frequent occurrence, the date of which may be fixed as ranging from the close of the first to that of the second week. The cases fatal at this period are almost always characterized by intense febrile action. The immediate cause of death is generally in the nervous system, and especially in the brain, which either suffers primarily, as in phrenitis, coma, delirium, or gives way in consequence of the disease having implicated some other organ, the functions of which are essential to proper cerebral action, as in pneumonia.

3. In a third class of cases, with less intense febrile action, the nervous centre is more gradually attacked, the cerebral symptoms appearing about the end of the second week. The nature of these symptoms varies extremely; but they generally commence by delirium, and, where fatal, end in coma. The access of genuine phrenitis at this period is infrequent.

4. In typhoid fever a fourth class of deaths may be distinguished; with a range of mortality which extends through the third, fourth, and fifth weeks. The appearances are those of increasing asthenia, accompanied by the results of the specific intestinal lesion.

Frequent as are the instances in which this somewhat arbitrary mode of division fails to apply, it appears to me not only to comprehend the chief features of a majority of cases, but also, what is more important, to supply something like a clue to their treatment. Of some of the worst cases of the first and second class it is scarce too much to say that they are necessarily fatal, whatever be the means adopted, just as are certain instances of cholera or scarlatina. But, from what I have seen of the action of emetics, I think some of these apparently hopeless cases might be at least improved by their early use. As regards the second class, I can add nothing to the eclectic plan of treatment, or to the list of remedies already made use of in this country. But it is in the third and fourth class that I have found the effects of treatment most marked. Great as is the mortality at these periods, the cases to which I am alluding go far to show that, in a patient who has not been weakened by undue depletion in the earlier stages, we ought never to despair of recovery.

In the cases of the third class, the indications are two: to mitigate the cerebral symptoms, and to support the strength of the patient.

In respect of the first, I need scarcely recapitulate the various remedies usually employed. In violent delirium, unaccompanied by high fever, opium and cold affusion to the shaven head seem most useful. Where the febrile symptoms are intense, or the delirium threatens to merge into coma, I have adopted the late Dr. Graves's plan of guarding the opium with tartar-emetic, or, what is perhaps better, ipecacuan, with

the greatest advantage. And the access of coma has generally been treated by large and frequent blisters to the scalp.

As regards the second indication, it is one of the chief objects of this paper to record the successful results of my careful and deliberate trial of a system of stimulation which was proposed some years ago by my friend and former colleague, Dr. Todd. This consists in the frequent exhibition of very small quantities of brandy diluted with water, alternately with beef-tea and other fluid food. The *rationale* of this plan I presume to be that ordinary port wine is a mixed fluid of uncertain strength, which requires digestion, and has the additional disadvantage of sometimes acting on the bowels; while brandy is taken up at once by the veins of the alimentary canal. The smallness and frequency of the dose in which the stimulus is administered are equally important; for it makes every difference to the patient whether his exhausted system is sustained by minute doses of alcohol every hour or half-hour, or partially intoxicated three or four times in the day. In the latter case the reaction between each of the separate doses sometimes places him in a far worse position than if no stimulus whatever had been given.

But whatever may be thought of this explanation of the above plan,—for which it ought to be stated that I alone am responsible,—few who had seen the cases under my care in the Royal Free Hospital could have doubted its efficacy. And one point of great importance respecting it is the fact that, at this stage of the disorder, severe febrile symptoms do *not* contra-indicate its use. Repeatedly have I seen all the appearances of fever clear off as though by magic under a quantity of stimulus (sometimes amounting to twenty-four ounces of brandy daily), which might well alarm any one who had not had practical experience of its effects. Whether its efficacy might not be reduced to some more exact and physiological statement than that of "supporting the strength," I hardly dare inquire, lest it should lead me to a topic which, though interesting, would be irrelevant here,—the relation of fever to combustion and animal heat. This much, however, may be pointed out, that alcohol is comparatively a very pure carbonaceous diet, and an agent which appears to check the process of waste in all tissues.

The additional treatment adopted with reference to the fourth class of cases may be described as chiefly directed to the intestinal symptoms characteristic of typhoid. Here again I have to own that one of the chief features of my treatment has been derived from my former teacher, Dr. Todd, who has long laid great stress on the use of turpentine in these cases. The distressing pain and tympanitis is generally much relieved by stupes, consisting of turpentine sprinkled on a hot wet flannel, and applied to the region of the cæcum. One great advantage possessed by these applications over blisters consists in the frequency with which they may be repeated. The same drug may also be administered by the mouth and rectum. But of the two the enema appears to be more efficacious than the mixture. And even apart from this fact, since the majority of these cases also require the very frequent administration of brandy and beef-tea, it is preferable in all but extreme cases to leave the stomach free for the latter, by giving the enema only. To both enema and mixture I have generally added full doses of the vegetable astringents with great advantage. And it is scarcely necessary to allude to the value of opium, which, unless especially contra-indicated by the cerebral symptoms, should generally be an ingredient of the glyster. The following prescriptions are those which figure most frequently in my notes:—Spirits of turpentine, five minims; tincture of catechu, half a drachm; mix, and afterwards add one ounce of infusion of krameria; make into a draught; to be taken every fourth hour. Spirits of turpentine, thirty minims; tincture of catechu, two drachms; tincture of opium, fifteen minims; mix; to be added to two ounces of decoction of starch, for an enema.

The small bulk of this enema gives it a better chance of being retained, which it very often is. Its efficacy in controlling the diarrhœa is remarkable;—so much so, that while the febrile symptoms continue very prominent, I have generally suspended its use as soon as it has reduced the evacuations to three or four per day, having reason to doubt the propriety of checking them where they do not threaten any serious drain to the system.

The efficacy of the treatment just sketched out may be best imagined from an example like the following:—

M. W——, aged 42, was admitted into the hospital, Feb. 14th, 1853, at about the

tenth day of typhoid fever. When brought in she might almost have been termed moribund. Her skin was of a brick-red hue, and of a pungent, dry, but not excessive heat. Her pulse, of about 130 per minute, was feeble, fluttering, and at times scarcely perceptible. She lay supine and unconscious; breathed stertorously; was blind and deaf; in short, the only relics of the animal functions were evinced by her still executing the movements of swallowing, and moaning when her tympanitic belly was pressed in the region of the cæcum. Her urine and fluid fæces were passed involuntarily, the latter at very frequent intervals. The integuments over the sacrum had sloughed.

She was ordered half an ounce of brandy with one ounce of water, every hour, and beef-tea as frequently in the alternate half hours. A turpentine stupe was applied to the belly, and the above enema administered. The two latter remedies were repeated in the course of two or three hours. The distressing state of the bladder and nates was also attended to. But I did *not* apply blisters, as perhaps I ought to have done; for not only did the state of the pulse and bowels render me less desirous of doing so, but, to say the truth, I had grave doubts whether the patient would live till a blister rose, and was also very anxious to concentrate the nurse's whole attention on the sedulous repetition of the stimulants and enemata.

On my next visit the patient was still living, but without any apparent amendment. Finding that she had swallowed better than I expected, the quantity of brandy was raised to eighteen ounces, and, after a few hours, to twenty-four ounces per day, to be divided into rather larger and more frequent doses than before.

The next day the stools were no longer passed involuntarily; and the pulse was decidedly improved in both force and rhythm, though nearly as frequent as before. She was sensible of the noise made by shouting loudly in her ear, but seemed not to be capable of appreciating the words used. Her skin was rather paler, and much less pungent to the feel.

From this time she gradually amended in every respect. The diarrhœa soon diminished in frequency, but continued for a fortnight to claim the most constant and watchful attention. But long before this the patient had recovered her senses, her eye had brightened, her skin had cooled down, her pulse had dropped, her tongue had peeled, she had perspired, and was, in fact, convalescent. Her recovery was, however, very much retarded by the presence in her bladder of a quantity of rough precipitated phosphates, which had doubtless accumulated there during the distension and paralysis of this organ, that had preceded her admission. Very little alleviated by treatment, the intense pain and partial hectic produced by this mortar-like mass were terminated by its gradual discharge piecemeal through the urethra, and she left the hospital cured.

Another case which may well illustrate the good results of the same plan is that of a woman who had been subjected to an operation for the relief of an ulcerated leg by my colleague, Mr. Gay. She was attacked with typhoid fever, and transferred to my care. The fever was very severe, and all healing action in the leg was already suspended, when another grave disorder supervened, in the shape of erysipelas of the limb. This spread upwards from the ulcer of the leg, and terminated in abscesses of the thigh and groin. In spite of all these serious complications, she made a very fair recovery, so as to be discharged from the hospital cured of all her complaints, and with a leg which did great credit to Mr. Gay's new operation, its large ulcer of many years' standing being covered by a firm cicatrix. I believe my esteemed colleague once or twice felt rather nervous on seeing the large quantity of brandy our patient was taking daily; and, to say nothing of the stimulus and support she received, I am persuaded that, unless the characteristic diarrhœa had been instantly controlled, this case must have been lost.—*Lancet*, *Dec.* 24, 1854, *p.* 599.

4.—ON TROPICAL FEVER AND DYSENTERY.

By E. Hare, Esq., Surgeon, 1st Bengal Fusiliers.

[This is the record of the results of an experiment ordered by Government in the General Hospital, Calcutta, and Garrison Hospital, Fort William, in the years 1849–50. Before the year 1638, the treatment of tropical fever was a complete failure.

In that year a new remedy made its appearance which was destined to remove the stigma so long resting on the treatment of this disease.]

The mode of administering bark in those days is well described by Lind, Hunter, and Clarke. Dr. Hunter, speaking of bark and remittent fever, says, "No disease requires more speedy assistance; for the efficacy of the medicine employed depends in a great measure on its being given early. The disease gains strength by repeated attacks, and is fatal, or materially injures the constitution. To wait for any crisis would be time irrecoverably lost. After a purgative,—it is of no great consequence what kind of purgative be given,—a little Epsom salts, jalap or rhubarb will do. After a few stools have been procured, to make it sit easy on the stomach, commence immediately to give bark; clearing out the bowels quiets vomiting, and moreover causes a quicker absorption of the bark into the system."

He commenced with a drachm dose every two hours, and his great anxiety was to give as much bark to his patient as possible without causing vomiting. "The dose," he says, "may be increased to two drachms every hour, but few stomachs will bear as much."

Forty-eight tea-spoonfuls of bitter sawdust daily, in a stomach sickened with fever, without doubt few could bear. If Dr. Hunter had had quinine, what vomiting he might have saved his patients. He did, however, his best to make the bark "sit easy." He tried infusions, decoctions, and mixtures with milk, coffee, wine, &c., all of bark, for bark must be given in some shape.

His ingenuity was taxed to the utmost to get bark down, and keep it there, and when he could not, he says he always lost his patient. If the bark purged, he tried to stop it that road too by giving laudanum. Dr. Lind, when the stomach positively would not receive more bark, injected it up the rectum, and cured bad cases in that way. Children who could not swallow much of the bitter wood, he always treated by clysters of bark, and actually dipped them in baths made of the bark, and applied large poultices of it to the stomach; so determined was he to saturate his patients with the antidote by any means, and all means.

[To the value of bark, Lind, Clarke, Hunter, Balfour, Bruce, and many others for nearly 150 years gave their united testimony. The statement was—Bark is the antidote to tropical fevers; he that gives most and soonest, will save most patients! A new authority then appeared. Dr. James Johnson now arrives—another revolution took place. The conclusion he came to was, that Bark, the proved antidote, was to be discarded, and the fevers treated solely as if they were inflammatory diseases, by large depletion and salivation. This system was pursued until 1833.]

In the year 1845 appeared our last authority for East Indian fevers, viz.,—Johnson and Martin on 'Tropical Diseases.' This contained a new edition of Dr. James Johnson's work, reiterating his continued confidence in his former opinions, after, he says, fifty years' experience; and the book was rendered especially authoritative to us in Bengal, from its having also the sanction of the name of Dr. Martin, who was long in extensive practice in Calcutta. Dr. Martin writes thus—"Early and copious bleeding at the very onset, is very generally necessary in the severer forms of Bengal remittent fever; then full doses of calomel, with sudorifics, short of producing salivation, with saline purgatives in the intervals. If the disease does not now yield, but on the contrary, if the secretions become watery or suppressed, and the paroxysms recur at shorter intervals, or with increased severity, leaving but imperfect remissions, then there is imminent danger—and inflammation or acute congestion, in some important abdominal or other organ, may be more than suspected. For this, in addition to abdominal bleeding, mercury, in small repeated doses, with antimonials, must be given mildly, to affect the system. It is the only known means of saving the patient, by anticipating the destruction of some organ essential to life. It here becomes—in the apt words of Dr. Jackson—a remedy of necessity. Where the remissions, on the other hand, are well marked, quinine in full doses (gr. iij. to gr. v., three or four times a day,) should be given without waiting for *every* thing. Some practitioners recommend that, before this drug is used, we obtain previously a clean tongue, natural secretions, and the absence of all heat of skin or local affection. I believe this to be a very dangerous practice. If we are to wait for everything, we shall often wait too long or till it is too late. I have always administered quinine in the more favourable cases now stated, in disregard of certain abdominal complications (those of the head should generally exclude

it,) believing that if I arrest the paroxysm, I do greatly more towards the cure at large than quinine can possibly do of harm to the local affection, the treatment of which by local depletion and counter-irritants, is not interfered with by this means. Again, all tenderness on pressure or local affection does not, in the case here stated, necessarily constitute inflammation."

My experiment in Calcutta was to prove, that "mercury" is not the only known remedy, or a remedy of necessity, when the remissions are imperfect, and there is acute congestion of some important abdominal or other organ, but that quinine ought to be given in such cases in enormous doses of from ℥i. to ℥ii. daily; and the more acute the symptoms, and the less the remissions, the larger and earlier are the doses of it required. That head symptoms should not generally exclude quinine, but demand its fullest and largest quantity, and the earlier the better; that it is most fatal waste of time "to wait till the remissions, on the other hand, are well marked" before quinine is given; and that so far from not waiting for "*every* thing," we ought to wait for *nothing*, but if the fever be undoubtedly malarious, and with bad symptoms, proceed at once to saturate the patient with the antidote; and that a grain even of calomel is in no case required. By following this system, in a public experiment of twelve months' duration, in the General Hospital at Calcutta, my mortality by fever proved to be one-twelfth only of the average mortality there for the last twenty years.

[Dr Johnson's verdict would not have been able to supplant the use of bark had it not been that in the worst cases, the already sickened stomach was not able to digest, or bear the large mass of woody fibre, &c., given in the bulky powder of the drug. Mr. Hare on this point says:]

Well assured as I am now of the certainty of cure from quinine, I doubt much if I would trust a bad case of fever to bark alone. It must cause inconceivable distress and vomiting to the patient, without the slightest benefit, for it cannot be retained. I can therefore readily imagine the delight with which the elegant and tasteless medicine, calomel, was resorted to, with depletion, which coincided so well with the theory of the day. And the result, I know from my own experience, must have been successful, quite as much so, perhaps, as the treatment by bark in its crude state. There cannot be a doubt, that if not calomel, yet certainly salivation is an antidote to malarious fever. The instant a patient's mouth is sore the fever leaves him. The mercury produces not the slightest effect till then, but from that moment the disease vanishes, as if charmed. The change is from death to life, from extremity of suffering to calm and comfort.

We all in India have had multiplied experience of this, but one should read Dr. Johnson's own case of malarious fever with dysentery. "As my night closed in, the exacerbation was great, and I was again delirious. On the third day my fever ran higher, with hot dry skin; and as night approached my apprehension of the usual exacerbation brought on extreme mental agitation. The surgeon endeavoured to cheer me with the hope of ptyalism, which he assured me would alleviate my sufferings [all this time he was taking calomel in scruple doses.] As the night advanced my symptoms became aggravated, and I was convinced a fatal termination must ensue. Suddenly at four o'clock of this same night salivation appeared, succeeded with such agreeable sensations, that I ejaculated aloud my heartfelt gratitude to heaven for my deliverance." Numerous instances, too, of the safety which salivation gives from the effects of the malarious poison, may be found in Dr. Johnson's book, viz., patients salivated for syphilis sleeping with impunity in places which were fatal to every one of their companions; and also many cases are on record of officers in India passing in a state of salivation by Dâk, unharmed through the most deadly jungles.

Dr. Johnson's new system was therefore offered to the world with proofs of its efficacy not often attained in medicine. He had in fact, without knowing it, discovered a new antidote to malarious diseases, and which, though used on wrong inflammatory theories, must have been nevertheless decidedly successful.

But since the discovery of the invaluable quinine, we have not wanted a return to the bold practice of our fathers: for in quinine we have all the qualities required. It is not a bulky medicine, and does not cause vomiting. It is a perfect antidote, and will cure all cases of malarious fever not otherwise hopeless, and it has no bad effect like mercury on the constitution. The gradual introduction of quinine in place of

calomel has left our mortality by fever much the same as in former days; but by the expectant treatment for malarious dysentery, where quinine has not been substituted for salivation, the statistics of the General Hospital for twenty-five years then that the mortality is actually double now what it was under the salivating treatment, viz., from 1826–1833 there was only one death in six admissions, whereas from 1846–1850 there was one death in every three admissions.

Now it would seem *a priori* probable that such cases of congestion as Dr. Johnson describes, and which are very common, viz., "the liver so gorged with blood, that it seemed broken down in its interior structure;" it would seem probable, that in some such cases less severe, an effort for repair might commence in some instances, and effusion of lymph be found after death, or pus, the result of inflammation following the injury of the textures. Yet, nevertheless, only three such cases are described in the records of the General Hospital, by a large number of observers, from 1820 through the long period of thirty years: and who have always been the best men of our service. The conclusion, therefore, may safely be relied on, that malarious fever is very rarely indeed accompanied with inflammation of any internal organ, and that, dropping all theory of the cause of the disease, we find, from inspection, that it destroys life, simply by an accumulation of blood in the veins of the brain and all the abdominal viscera. Now, quinine has the power of stopping these accumulations, and though we may occasionally relieve the present tension of the viscera by local or general bloodletting, yet the congestions will again occur, and eventually destroy life, except we administer their antidote as early and in as large doses as possible; and the experience of those who used bark, and my own experience in the General Hospital, show not only the safety, but the immense advantage of this treatment. I am myself convinced that malarious fever is caused by a blood poison of a most depressing kind, and destructive of all vital action, and that the excitement which we see in these fevers is far from the stimulus of the poison, but is the last effort of the vital power, not quite overcome, struggling to relieve itself from the Lethean influence. The most dangerous form of this fever is not when this struggle is strong, which is a most favourable symptom, but when vitality is so depressed that no distinct reaction takes place, the skin changing from hot to cold twenty times and more in the day, with partial sweats here and there in parts only of the body, or where, as in the algid fever described by Dr. Haspel, in Africa, "the skin is icy to the touch; a subtle poison appears to be preying upon the vitality of the economy, the patient resembling a breathing corpse; the tongue and breath are icy, the voice extinct," and, as he adds in the next page, "the surface generally blue," from the accumulation of the whole blood of the body in the veins. I have seen very many of these cases, and anxiously watched over them while I administered enormous doses of quinine in solution. I have had patients lie in this state more than forty-eight hours, and the first symptom of recovery was violent reaction, which I hailed with delight; for then a little cold water to the head, and the continuance of quinine, rapidly restored the patient to health. I am convinced by such cases that we are wrong in considering quinine merely as an antiperiodic.

These were the arguments which, after careful trial for three and a half years, I published in a small pamphlet, together with a treatise on Dysentery at Delhi, in November, 1846. It excited attention, and numerous successful cases by others were published in our Indian periodical, then edited by Dr. Edlin. But notwithstanding its favourable reception, and so far as its treatment had been tried, successful result, the seniors of our service especially, and many of my friends who had been greatly persuaded of its safety, yet confessed freely their fear of giving quinine in fever, when the head was affected. They said, and justly, that the treatment by calomel for these cases had been always considered by every one so imperative, and the action of quinine on the brain so like a stimulant, that they were afraid to risk the lives of their patients by giving them quinine in the large doses required, till it had first been extensively tried. At last the discussion on this, and my plans for dysentery, were so prominently brought to the notice of the Medical Board, that they wrote to the Governor-General, urging a full trial of them at the General Hospital. The Punjaub war broke out, and all was in confusion; but when it ceased, the Board applied again to Lord Dalhousie, who immediately assented, and arranged himself the general plan of the experiment, and I was

ordered to proceed to Calcutta. A large ward in the General Hospital was set apart for my patients, and I was placed under the orders of Sir James Thompson and the Surgeon of the Hospital, Dr. Nicolson, by whom my patients were inspected; and my cases and reports, with every dose of medicine, were sent through them monthly for the information of the Board. Twelve months, to comprise all the seasons of the year, were fixed as the term of the trial, and my results compared with the average mortality for fever and dysentery at the same hospital for the twenty previous years. All the fever patients, on admission to the hospital, were sent to my ward for treatment, which was without exception simply Dr. Lind and Hunter's system, substituting only quinine for bark. I ordered my apothecary to give ℈j of quinine the first moment of admission, before I could be called to see the patient, and one dose of castor oil, or jalap and cream of tartar, if the bowels were not loose. If they were, this was omitted. The patients afterwards took three, four, or six scruples of quinine during the twenty-four hours. The more severe the fever, the more frequently was the ℈j dose administered, till complete cinchonism was produced, viz., singing in the ears and deafness. General bleeding and even leeches were rarely required, and only for plethoric sailors, just arrived in the country. For these one bloodletting (it was never repeated) often gave great temporary relief, and I always used it strictly on Dr. Mackintosh's principles, just before the accession, to break the first paroxysm, and give time for the quinine to act. Bleeding after the paroxysm, even where the fever is decidedly continued, is often highly dangerous. I believe, too, that moderate bleeding assists greatly in procuring the rapid absorption of quinine into the blood. Leeches were very rarely used. Purging I greatly object to, for my experiment on malarious dysentery convinced me that it prevents absorption of the quinine.

The bowels, however, require to be freed from their foul contents, caused by the morbid secretions of the congested liver and intestines. For these, if allowed to remain, cause sickness of stomach and vomiting of the quinine. I much prefer large enemata to purgatives, in all cases of fever; but my syringes were in such constant employment for my dysentery cases, that I could not conveniently use them for fever also. I would in fact treat with perfect confidence any case of malarious fever, however severe, with quinine and cold water to wash out the bowels and apply to the head, liver, or other congested organ. I by no means, however, deny the extreme relief that a moderate bleeding at the proper time often gives to a plethoric man—leeches I have found of less value.

I treated in this way 129 patients with one death, the average in the General Hospital for the last twenty years having been one death in every 11¼ fever cases. I had therefore less than one-twelfth part of the average mortality.

Among the long-neglected cases of debauched sailors from the streets and shipping of Calcutta, who are the majority of the patients of the General Hospital, and are often sent there after they have been lying sick many days on board their ship, or wandering about the bazaars of Calcutta, till they are picked up insensible by the police, and deposited in the hospital, I had, of course, most numerous patients in all stages of delirium and congestion of the brain, and many with coma, and black sordes on the teeth and tongue; some also with acute and ardent symptoms; but all had the same unvaried treatment, the only distinction made being more frequent doses. For in these dangerous symptoms I always pushed the quinine most freely, yet the result was as above.

[Mr. Hare treated 421 cases of Bengal fever. The general plan was to give scruple doses of quinine to every patient with symptoms of fever, from the first moment of admission, and they frequently had taken forty grains of quinine before he saw them; and it is to be observed that though twenty grains of quinine will produce symptoms of cinchonism in a healthy man, yet a bad fever case will often take four to six scruples daily for three days without any bad symptoms.]—*Edinburgh Medical and Surgical Journal, Jan.* 1854, *p.* 40.

5.—NOTES ON EPIDEMICAL DISEASES.

By Dr. William Addison, F.R.S.

[The interesting remarks in this paper are chiefly upon endemic atmospheres.]

Exhalations arising from marshes, the low shores of rivers and harbours, from

jungles, and other uncultivated and undrained places, constitute a poison which produces fevers of various types and degrees of intensity. There are situations in hot climates in which these exhalations generate a poison so intense, that a few inspirations of the air in which they are diffused is capable of producing death; and there are other situations in which a less highly concentrated poison accumulates, the inspiration of which for a short period produces a fever capable of destroying life in a few hours.

That substances mixed or suspended in atmospheric air may be conveyed with it to the lungs, and immediately enter into the blood, any one may easily satisfy himself by passing through a recently painted room. The vapour of turpentine diffused through the room is transmitted to the lungs with the air which is breathed, and passing into the current of the circulation, will exhibit its effects in some of the fluid excretions of the body, even more rapidly than if it had been taken into the stomach.

The form and severity of disease occasioned by malaria are in some proportion to the intensity of the sun's rays; it is by a consideration of the points of temperature that the relation of different kinds of fever becomes apparent. Under tropical heats, fevers are most violent, and assume the continued form; in a more temperate climate the remittent, and in colder countries the intermittent, are at least very usual types. That the miasm which occasions these disorders is of terrestrial origin, seems proved, for we do not find them prevailing among sailors out at sea, whatever may be the temperature under which they cruise. It is when they approach the coast, or land upon it, that they are attacked. Again, it has been observed that in malarious places, fevers abound more in hot and dry years than in those which are more temperate. In the higher grounds of the West Indies, agues occur; as you descend, and the mean temperature increases, remittents are met with; and in the lowest and hottest parts fever becomes continued.

A very instructive fact of this kind has been related by Dr. Ferguson, in Antigua. The barrack was on an eminence, Monk's Hill, six hundred feet above the level of the marshes. So pestiferous was the air of the marshes, that it often happened to a well seasoned soldier mounting the night-guard there in perfect health, to be seized with fever, and die within less than thirty hours; those at Monk's Hill having no fever of any kind. Seventeen artillerymen were stationed halfway down the hill. Every one of these were attacked with remittent fever, of which one of them died. Thus, in the same place, malaria in the level plain caused the worst form of fever: at an elevation of three hundred feet, it gave rise to intermittent; and at the height of six hundred, its influence was scarcely felt at all.

It was long ago remarked by Dr. J. Hunter, that a difference of a few feet in height gives a comparative security to persons living in the same building; and the danger of sleeping on a ground floor has been noticed in the writings of Lind and others. With respect to cholera, it has been found that the number and severity of the cases diminish in proportion to the altitude or level of the houses. In London, an elevation of some twenty or thirty feet lessens the per centage of deaths of this disease. It is therefore often a safe precaution to remove the sick from the lower to the higher apartments of the house,—a more speedy and complete recovery having been found to follow.

A moist and calm state of the air is favourable to the outbreak of endemic sickness. "Under certain atmospheric conditions," says Mr. Wagstaff, parochial surgeon, of Lambeth, "when I arose in the morning and found the atmosphere warm and moist, I could always foretell that there would be an increase of malarian disease of some sort." During the plague season in Egypt, the atmosphere is constantly charged with moisture; so much so, that the difference between the wet and the dry bulb thermometer is not more than two or three degrees; the average throughout the year being eight or ten degrees. Moreover, as a general rule, especially in hot climates, it is either at the commencement of the rainy season, or soon after its termination, that endemic disease most abounds. In the West Indies, for example, the last month of the rains, and the two which immediately follow, are generally sickly months.

On referring to the experience of cholera in this country, it appears that the great majority of seizures were between midnight and six in the morning. In Hamburgh, the attacks were so generally in the night, that when the epidemic was at its height,

many persons were afraid to go to bed at all; and the same observation has been made with respect to plague when it prevails as an epidemic. Dr. Laidlaw states that in his own experience at Alexandria, during the prevalence of the plague in that city in 1835, eight-tenths of those who were attacked were seized during the night time. In the year 1766, two East Indiamen anchored off the Comoro Islands; the crews were attacked by fever, and seventy of the number died. In this instance, the fever affected those of the crew only who slept at night on shore, and having gone through them it ceased. Mr. Shields, in his report of the endemic fever of Batavia, says, "Almost every person who slept only a single night at Edam died. No ill effects were experienced from going on shore in the day time, or among the sick at the hospital. I myself regularly visited the hospital at Edam every day with perfect impunity, till one night I stayed rather late, in consequence of which I was three days afterwards seized with fever." Dr. Lind says, "the nature of an unhealthy shore is such, that no sooner are the sunbeams withdrawn, than the air in the most sultry climates feels raw, damp, and chilly; and it has been recorded of persons seated in the evening air after sunset, that they have suddenly felt faint, giddy, and sick, and obliged to retire;" these symptoms warning them of the presence of a terrestrial miasm. Experience then in all climates is decisive that there are local sources of sickness arising from terrestrial effluvia, and that their potency is increased by warmth and by moisture, succeeded by cold,—by a low situation, and the night season.

But let us recapitulate the facts:—

Fevers arising from terrestrial effluvia are more severe and fatal in hot than in colder countries. Their onset, form, and characters, bear some proportion to the intensity of the sun's rays. They are for the most part limited to level plains, marshes, low damp situations, jungles on the sea shore, and the banks of rivers. Their attack is usually referred to the night season; and an elevation, sometimes of only a few feet, has been found a security against them. Now, terrestrial effluvia must be as abundant in the atmosphere during the day as at night. How is it then that the diseases they occasion are referred particularly to low situations, limited areas, and the night season? Under what general law then can these facts be arranged?

All substances freely exposed to the heat of the sun give off effluvia. This is so obvious a truth with respect to those which have odour, that nothing need be said to substantiate it. There are other substances quite inodorous when dry; but which give out when moist and warm a strong scent. A stone or piece of earth will give out an effluvium perceptible by the smell when gently breathed upon. Woollen clothes may have no smell when quite dry, but when wet and brought into a warm room they smell strongly. Epsom salts, sulphate of zinc, and other salts, when dissolved in water quite cold, have but little or no perceptible odour; when, however, they are put into solution with boiling water, they give out a strong effluvium. The ordinary operations of cooking furnish numerous similar facts. Observe, too, the peculiar effluvia arising with the vapour when hot iron or coals are quenched with water. These instances show that warmth and moisture facilitate the extrication of an effluvium from bodies in which nothing of a volatile nature is perceptible whilst they are perfectly dry; the effluvium or odour escapes in conjunction with aqueous vapour, and its sensible qualities increase in proportion as temperature increases. Every one must at some time or other have been sensible of the powerful effluvia given out on all sides, when the first rain after a dry period meets the heated soil. And it has been noticed by those who have attended to the matter, that the effluvia are stronger in proportion to the difference between the heated surface of the ground and the cooler superincumbent air. Again, all are aware of the strength of odours in a still atmosphere after a hot day when dew is beginning to appear on the grass, as though volatile matter carried off by the evaporation of moisture was made sensible in some especial manner, by condensation of vapour. When the moisture which condenses on the walls and windows of a room in which large numbers of persons are assembled, is examined, it is found to be impregnated with animal matter.

In the example of the heated saline solutions, aqueous vapour, with its associated effluvium issuing from the hot liquid, is immediately condensed by the colder air

and hence the readiness with which the presence of the effluvium is at that moment detected.

Evaporation takes place from every part of the earth's surface, and the rate or quantity of the aqueous vapour disengaged is in proportion to the temperature. When the ground is hot and dry, evaporation, upon the first fall of rain, is prodigious.

From the instances which have just been stated, we must conclude, that terrestrial miasms are diffused through the atmosphere in combination with the vapour exhaled by evaporation; and that quantity or potency increases in proportion as the temperature of the surface from which they arise increases. The miasm is dissolved by the vapour, and vapour is dissolved by the air. These are effects of the sun's rays.

The researches of Leslie, Romford, and others, have shown that different bodies have different powers of radiating caloric, and that the nature of the surface has an important influence over the process. This produces corresponding variations in the rate of cooling; those surfaces which radiate heat most rapidly becoming cold much the soonest.

When the sun descends below the horizon, every portion of the earth's surface cools by radiation; and a reduction in the temperature of the superincumbent atmosphere necessarily ensues. But, as this radiating property is very different in different surfaces, and in different situations, so great variations are occasioned in contiguous places, not only in the temperature of the air, but also in the amount of condensation of vapour; more mist, more fog, or dew, appearing where radiation is greatest. These are the effects of the night season.

Dr. Wells frequently observed the temperature of a grass meadow at night to be several degrees below that of the air some feet above it; and thermometers, placed in different situations upon the ground, were found to mark very different temperatures, the greatest amount of dew appearing where the cold was greatest. On clear and still nights, a difference of *thirty degrees Fahr.* has been noticed between the temperature of good radiating surfaces and that of the air some height above them. More frequently the ground has been observed ten degrees colder than the air twenty or thirty feet above it: and it is thus that the leaves of trees have been found quite dry when the grass of an adjacent meadow is loaded with dew. "I had often smiled," says Dr. Wells, "in the pride of half knowledge, at the means frequently employed by gardeners to protect tender plants from cold, as it appeared to me impossible that a thin mat, or any such flimsy substance, could prevent them from attaining the temperature of the atmosphere, by which alone I thought them liable to be injured; but when I learnt that bodies on the surface of the earth become often colder than the air, by radiating their heat to the heavens, I perceived immediately a just reason for the practice which I had before deemed useless. Being desirous, however, of acquiring some precise information on this subject, I fixed perpendicularly, in the earth of a grass-plat, four small sticks, and over their upper extremities, which were six inches above the grass, I drew tightly a very thin cambric handkerchief. In this disposition of things, therefore, nothing existed to prevent the free passage of air from the exposed grass to that which was sheltered, except the four small sticks; and there was nothing to radiate downwards to the latter grass, except the cambric handkerchief. The sheltered grass, however, was found *five degrees Fahr.*, or more, warmer than the unsheltered. One night the fully exposed grass was *eleven degrees* colder than the air; but the sheltered grass was only *three degrees* colder." A canopy of clouds, walls, buildings, or any other shelter from the aspect of the open sky, act upon the same principle, and in the same way.

The question, whether on any particular night, condensation will or will not occur, and the period that may elapse after sunset before it takes place, is determined by the relation between the temperature of the air and the temperature of the dew-point. This is constantly varying. When the interval between them is large (ten or twelve degrees), some time is required for the heat of the air to fall to the dew-point, condensation is delayed, and the air is said to be dry. On the other hand, when the interval is small (one or two degrees only), condensation occurs immediately after sunset, and the air is said to be damp, and those surfaces which radiate heat quickly become soon evident, especially should the atmosphere be free from

cloud, and without wind. The banks of rivers and lakes, open plains, marshes, meadows, and low situations, are wetted with dew, or the first to be shrouded in mist or fog; and they are sensibly colder than other places.

Thus it is found that the conditions under which malarious diseases arise accord with the laws of evaporation and terrestrial radiation; and we conclude, that the precipitation of vapour—mist, haze, fog, or dew—may be taken as evidence of the concentration of the poison. Condensation of vapour commences; and it appears a consequence of this, that associated miasms, left alone, begin to show their proper qualities. Not that at all times noxious effluvia pass into the air, so as to be made sensible whenever dew or fog appears; but that when they do exist, quantity is determined by heat and evaporation, and poisonous qualities brought out when the associated vapour is condensed.

The peculiar properties of many bodies disappear in combination. There is nothing, therefore, to negative the supposition that the hurtful qualities of terrestrial effluvia may appear only when their union with aqueous vapour is decomposed: and the theory accounts for the comparative absence of noxious qualities in the day time. It is not more difficult to conceive the irregular and unequal dispersion of hurtful exhalations over limited spots or tracts of country, occasioned by terrestrial radiation, than to be convinced of similar inequalities in the distribution of clouds and fog. And this would explain the immunity afforded by elevation. Moreover, sundry phenomena in relation to diseases have been attributed to the light of the moon; but, when the moon shines, the atmosphere must be free of clouds, and a clear atmosphere is the most favourable to the specific influences of radiation.—*Association Medical Journal, Jan.* 20, 1854, *p.* 56.

6.—*Case of Scarlatina produced by Inoculation.* By R. Barrington Cooke, Esq., Scarborough.—During the summer of 1850, I attended a child, aged seven years, an out-patient of King's College Hospital, who was suffering from an attack of scarlatina maligna, with sloughing sore throat. The child died, and on making a *post-mortem* examination of the body, I inflicted a small wound on the third finger of the right hand. The wound shortly after became inflamed, and suppurated, the hand and arm painful; and red lines in the course of the lymphatics, extending up the arm, showed the track of absorption of the virus; the glands in the axilla likewise became painful and enlarged. During six days, I experienced a good deal of uneasiness and pain in the limb, accompanied with some irritative fever. Towards the end of the seventh day the characteristic eruption appeared over the body, accompanied with sore throat.

The swelling and inflammation of the arm now began to subside. The attack, which was not of a severe character, ran its usual course, and in about three weeks from the commencement of the illness, I was enabled, though in a weak state, to leave town, when after a short sojourn in the country I returned to my duties as physician-accoucheur's assistant. The urine was albuminous, but no œdema supervened. Three years previous I had suffered from a slight attack of the same disorder.

In concluding, I would remark, first, that the mildness of the attack in my own case, as contrasted with that of the child, arose probably from the difference in age between the subject affording the virus and myself; our different positions with regard to air, diet, &c., and it may be, some degree of immunity from the effects of the previous attack; secondly, that the period of latency, or incubation, was more prolonged, owing, probably, to delay in the process of absorption through the lymphatics, whereas, in Dr. Rowland's case, the virus seems to have been at once received into the venous system.—*Medical Times and Gazette, Dec.* 17, 1853, *p.* 639.

7.—*On Certain Pathological States of the Blood, especially Characterizing many Dangerous Diseases, and of the Intentions and the Means by which these States are most Successfully Treated.* By Dr. James Copland, F.R.S., &c.—[The following observations are the substance of a paper read before the Medical and Chirurgical Society.]

The morbid state to which the author more particularly directed attention, might be termed contaminated or vitiated according to the causes of alteration, as these causes might be external or internal in respect of the frame; external agents and influences, as well as internal vital and functional changes, might equally be the sources of this vitiation, or both might co-operate. If a cursory view of the sources whence vitiation or contamination of the blood proceeded were taken, they would be found most numerous, varied, and often associated, and that they infected or invaded the blood by one or more channels; and although manifested in every phase and grade of morbid change, yet they frequently preserved certain specific features. These morbid states of the blood might arise—First, from causes acting on the digestive canal, and the vessels proceeding from this canal; secondly, from agents taken in by respiratory action, and through the medium of the respiratory surface; thirdly, from causes acting upon any part of the external surface or any tissue or part of the frame; fourthly, from the arrest of any depurating or eliminating function, or even from the impeded or imperfect performance of such function; fifthly, from the absorption or passage of any morbid purulent secretion or excretion into the circulating mass; and, sixthly, from the conditions of vital influence, or the organic venous power endowing the heart and blood-vessels, and from the reciprocating influence exerted by the vascular system, and the hæmato-globulin circulating through the system. The author then detailed copious illustrations of the operations of the several causes of contamination passing through these channels. The effects of various kinds of food; emanations from numerous sources of pollution; air vitiated by overcrowding; absorption by an abraded, punctured, or incised wound; the passage of sanious, puriform, or other morbid matters into the circulating current; defective action in, and imperfect discharge of, the several depurating functions, so necessary to the preservation of a healthy state of the blood; and, lastly, influences or agents, extrinsic and intrinsic, which excite or depress the organic nervous system, reacting on the vascular system, and changing the blood circulating in it. The author adverted at some length to the operation of these conditions on the blood itself, manifested by a destruction or waste of the hæmato-globulin or red corpuscles. He was led to believe that these changes consisted—first, in a metamorphosis of the globules, or a partial vital conversion or decomposition of them; secondly, by a portion of the globules or hæmato-globulin being converted into bile; thirdly, by the epithelial cells thrown off by the several emunctories, especially the kidneys, skin, and intestinal mucous follicles, being transformed blood-globules; and, fourthly, that they are also partly expended in the elaboration of the genital secretions in both sexes. These were the chief modes or sources of waste.—*Lancet*, *Nov.* 19, 1853, *p.* 483.

8.—ON NITRATE OF POTASH IN RHEUMATISM.

By Dr. Richard Rowland.

[Dr. Basham speaks highly of the use of nitrate of potash in rheumatism. Dr. Rowland relates thirteen cases in which it was employed, in some cases after colchicum had failed. Three drachms of the salt, dissolved in a pint of water, were taken in the twenty-four hours; but the dose varied according to the case. Dr. Rowland says:

From a summary of these cases, it appears that the average duration of the acute symptoms after the commencement of the treatment was about eight days. In three cases the rheumatism disappeared before the seventh day. In one it was protracted to the eighteenth. But most of the patients had the complaint some days before their admission to the hospital, and sometimes it was not possible to obtain precise information as to the date of the seizure; but so far as this could be determined, the whole average period of the acute cases appeared to be about sixteen days.

Taking the results from the most unfavourable aspect, it must still be admitted that they support the opinion of the efficacy of the nitrate of potash in rheumatism. In some of the cases the relief followed its exhibition almost immediately, and the improvement was rarely delayed for any considerable period. Besides the very ob-

vious advantage of removing a complaint so painful as rheumatism as speedily as possible, it is otherwise important to lessen its duration, and especially because it diminishes the chances of those frightful complications which may attend the disease at every stage of its course.

In no instance was there even threatening of valvular disease. The condition of the heart was carefully watched at each visit, and in all the patients it preserved its natural sounds and rhythm. This scrutiny was always repeated before each patient left the hospital, and with similar negative results. It is true that in two instances the endocardial murmur existed; but in both these patients the complication did not commence in the hospital. One had an acute attack of rheumatism, in which the nitrate was prescribed with complete success, no vestige of heart affection being present on her dismissal. But a fortnight afterwards she was brought to us again, having had a relapse of the complaint, and now a loud systolic murmur was immediately detected. In another the heart was hopelessly injured previous to his admission. These cases cannot be therefore set down as evidence against the utility of the nitrate of potash in rheumatism. At the same time the number of examples is far too few to establish the probability of immunity from heart complication under this treatment. It can only be said that nothing of the kind occurred in these patients.

With regard to the form of the disease in which the salt is most likely to prove beneficial, the testimony derived from the cases now cited decidedly shows that its efficacy is most remarkable in acute rheumatism; and it might almost be said that the beneficial result was the more striking in proportion to the activity of the attack. When subacute rheumatism supervened upon the chronic, although the nitrate was commonly efficient in removing the former, it seemed to exercise no influence over the latter. So invariably was this observed, that I have ceased to prescribe this medicine in purely chronic cases. Pains of a gouty tendency, and the capsular variety of rheumatism, appear to be equally irremediable by this means. No preliminary treatment was adopted, but the salt was almost invariably commenced at whatever period of the complaint the patient happened to be on his admission. There is no reason to suppose that its influence is greater at one stage than at another. It should be stated, however, that an aperient was prescribed when it was required, and sometimes an anodyne at night, when the sufferings were so great as to prevent sleep.

It is not easy to determine the mode of action of the salt in this affection. The theory that it removes from the system a supposed redundance of the lithates and lithic acid can hardly be sustained. Not only was there no marked acidity of the urine in several of the patients, but in two of them it was strongly alkaline, and in one loaded with phosphates. Even during the continuance of the nitrate the urine regained its property of slightly reddening litmus-paper. Nor was there any sustained sensible action either on the bowels, skin, or kidneys. Purging never once occurred. In a few cases the perspiration was occasionally increased, but by no means continuously; and bearing in mind the tendency to copious sweating in rheumatism, it might be questioned whether the salt does not exert an influence in moderating, rather than augmenting the cutaneous discharges. The urinary secretion was increased more frequently, and rather more permanently, but the diuresis was never very remarkable. Whether the salt possesses any action on the fibrine of the blood these observations do not enable me to determine, but the symptoms and aspect of some of the patients scarcely warranted the idea that there was an excess of that ingredient in the circulating mass.

The dose of the nitrate never exceeded half an ounce, and it was sometimes limited to three drachms daily; it was dissolved in a pint of water, the patient being directed to take the whole in twenty-four hours. This is a much smaller quantity of the salt than it has been recommended to employ for the cure of rheumatism; but there is a manifest advantage in prescribing it in as small a dose as will answer the purpose, for there will be less danger of its producing gastric or renal irritation; and when two or three ounces are given daily, a large quantity of fluid is required for the necessary dilution, and this circumstance alone would render the remedy too disgusting to admit of its general adoption. No injurious consequence arose in any instance from the exhibition of the medicine, nor was there any complaint made by the patients of the disagreeableness of the remedy, or of

any inconvenience arising from its use. There may be an apparent exception to this fact in one patient, who complained of dysuria when undergoing treatment with the nitrate. But as this symptom continued, although the medicine was withdrawn, and subsided after it had been again prescribed, it is hardly probable that the irritation had been occasioned by it in the first instance.—*Lancet, Feb.* 11, 1854, *p.* 149.

9.—*Treatment of Acute Rheumatism by Acetate of Potash.* By Dr. Golding Bird, F.R.S.—[Dr. Bird seems to depend on this remedy more than any other in the treatment of acute rheumatism. But, after all, it appears that the efficacy of lemon-juice itself depends not so much on the acid as upon the supercitrate of soda which it contains. It seems that all these kinds of salts are useful when they act powerfully on the kidney, and eliminate poisonous matter from the system. Thus citrate of potash, citrate of ammonia, acetate of ammonia, nitrate of potash, as well as the acetate of potash, all act very beneficially in rheumatism. On the subject of acetate of potash, Dr. Bird affirms,]

That he has never seen the disease in question yield with so much facility to any other remedy. In the several cases in hospital practice under his own care, Dr. Bird has seen the cure to be more rapid, and the immediate relief to the patient more marked, by the use of acetate of potash in quantities of half-an-ounce administered, largely diluted, in divided doses in twenty-four hours, than by any other treatment.

In three days he has frequently found the exquisite pain of the joints nearly absent, the patient comparatively comfortable, and able to bear with greater ease the helpless state in which the still swollen joints placed him. In no case have any bad consequences succeeded the employment of the remedy, while complete recovery has been more expeditious, and the ill effects of colchicum and mercury have been avoided. The most interesting and no less important fact has been noted by Dr. Bird in his experiments with this salt, namely, that the pain of the disease remarkably declines so soon as the urine becomes alkaline and rises in specific gravity; and he further records his impression, that the tendency to affections of the heart is very much lessened after the alkalinity of the urine has been established.

Dr. Bird's experience of the efficacy of the acetate of Potash in the treatment of acute rheumatism has been derived from a large number of cases. The only adjuvants he has employed have been a mercurial laxative, if constipation existed, and a full dose of Dover's powder on the first day or two of treatment if the pains be severe; the joints being wrapped in sheets of wadding, a plan the author has followed since he experienced in his own person the comfort it affords.—(*Urinary Deposits*, 4th edit.)—*Edinburgh Med. and Surg. Journal, April*, 1854, *p.* 427.

10.—ON THE INFLUENCE OF LIQUOR POTASSÆ ON THE URINE IN RHEUMATIC FEVER.

By Dr. E. A. Parkes, Professor of Clinical Medicine in University College, &c.

The following summary expresses in general terms the action of liquor potassæ on the urine of twenty-four hours:

Urinary Constituents.	Condition in Rheumatic Fever.	Effect produced by Liquor Potassæ in large doses.
Water	Greatly diminished . .	Slightly increased; (over rheumatic average).
Solids	Increased	Still more increased.
Urea	Probably increased . .	Probably increased.
Uric Acid	Increased	If affected at all, slightly increased.
Creatine, &c.	Undetermined	
Sulph. containing comp.	In considerable quantity	Probably increased.
Chlorine	Diminished	Unaffected.
Sulphuric Acid	Greatly increased . . .	Still more increased.
Phosphoric Acid . . .	In some quantity . . .	Uncertain.
Bases	Undetermined	
Insoluble Salts	Undetermined	

The urine in rheumatic fever appears to have peculiarities which distinguish it from the urine of other fevers. It resembles the typical febrile urine in its deficiency of water, in its depth of colour, in its great per-centage of solids, and in the rapid deposit of dark urates. But apart from possible differences connected with the urea, and extractives, it differs from the febrile urine of pneumonia and the specific fevers in the greater amount of the absolute excretion of solids (i. e., in 24 hours) and in the enormous excess of sulphur, and its derivatives. The excretion of sulphuric acid is far greater than in any other febrile disease which I have examined,—viz., than in small-pox, typhus and typhoid fever, scarlatina, erysipelas, pyæmia (with purulent arthritis), pleurisy, and pneumonia. In these cases the sulphuric acid has been also in excess of that which would have been formed during healthy tissue metamorphosis, except in some cases of pneumonia, in which the sulphuric acid (in common with other urinary ingredients) has been retained in the system during hepatization, and been poured out afterwards during resolution.

The excess of sulphuric acid in the rheumatic urine is not due to an excess of febrile action in this disease, over the other fevers just enumerated. In cases of typhoid fever and scarlatina, the temperature has been higher than in rheumatic fever; and yet the amount of sulphuric acid passed in 24 hours has not reached to half the quantity. The sulphuric acid is not, then, in any close proportion to the temperature. As the temperature is usually considered to be a correct indication of the rapidity of tissue-metamorphosis in febrile diseases, it follows that rheumatic fever is an exception to the rule, and that the sulphuric acid is in excess of what would have been predicated from the amount of fever.

It appears, therefore, a fair inference that in rheumatic fever there is a source of sulphuric acid, independent of the augmented disintegration of tissues, as measured by the heightened temperature, and it may perhaps be conjectured that chemical analysis will hereafter demonstrate the existence in the blood of some compound richer in sulphur than fibrine and albumen, which during the height of the disease is rapidly disintegrating, and forming, probably among other products, sulphuric acid.

The effect of liquor potassæ, of the bicarbonate, and perhaps of the other alkalies is at once to aid this disintegration, and to increase the elimination of sulphuric acid, by augmenting the alkalinity of the blood. If this hypothesis be correct, the administration of alkalies in rheumatic fever would acquire a basis more rational than that usually assigned—viz., that they merely neutralize acid already formed.

With respect to the efficacy of liquor potassæ in rheumatic fever, although the cases are so few in number, yet as it is unlikely that additional cases can be treated so rigidly without other medicines, and as in fact other remedies (mercurial purgatives, colchicum, opium, hot air bath, &c.) ought to be employed, I may mention the general conclusions which may be deduced from these four cases.

No symptom was immediately affected, except the pulse; this was generally, but not always lowered, and sank, although the temperature continued high, to 80, 70, and even lower. The febrile heat (as measured in the mouth), the articular pains, and the perspirations, were not affected, except in so far that the duration of the disease was shortened. The effect on cardiac complication was uncertain; in one case pericarditis came on, but there was a strong suspicion that it had actually begun before the medicine was commenced; in two cases basic systolic murmurs appeared, in one case before, in the other (man), decidedly after the potash was commenced. The murmur, however, disappeared during convalescence.

The duration of the disease was in three cases short, although the severity of the early symptoms led to the belief that it would be obstinate and long-continued. The first case lasted scarcely a week; the second eighteen days; and the third (relapse) about seven days. In the fourth case (old and recent heart-complication, pericarditis) the duration was greater, and the patient was not convalescent till the 23rd day. The average of the whole was 13·75 days from the first symptom; but as an average of 3·25 days occurred before treatment, the actual period from commencement of treatment to perfect freedom from joint-pain and fever, was ten and a half days. This result (if it occurred in all cases) would certainly be favourable, but it is well known that other observers have obtained equally fortunate results from very different treatment; so that the superiority of the treatment by liquor potassæ, *per se*, cannot be held to be sufficiently proved.

A great disadvantage in liquor potassæ is its nauseous taste, and frequently also, after a time, if it be given in large doses (and this is necessary), the stomach does not tolerate it well.—*British and Foreign Medico-Chirurg. Review, Jan.* 1854, *p.* 248.

11.—*On the Action of Iodide of Potassium.* By Dr. R. W. Basham.—[Any observations upon that so much neglected branch of medical science, Therapeutics, demands every attention. Dr. Basham makes the following important remarks on the action of iodide of potassium. He believes, that though in other forms of disease this drug presents pretty steady characteristics, yet that it is in diseases of a rheumatic character that its beneficial results are most uniformly seen. He says:]

From time to time cases have come under observation, presenting the usual symptoms of chronic rheumatic pains, gnawing and erratic, with paroxysms aggravated by atmospheric changes; and there has been diffuse tenderness of the periosteal surfaces nearest in contiguity to the skin, as the scalp, clavicles, ulna, tibia, &c.; sometimes distinct tumefaction with exquisite tenderness, and these nodal elevations in some have been evanescent, in others, persistent during the whole course of the malady. It has been frequently noticed, and practitioners of experience cannot have overlooked the fact, that some of these cases materially and rapidly improve under the administration of the iodide of potassium, while in others, with symptoms in all respects identical, no benefit has been derived or improvement become apparent till the patient has been put through a course of the bichloride of mercury and sarsaparilla.

I was once inclined to think that these varying results depended on peculiarity of constitution, and that the treatment of such cases by one or other of these remedies must remain, to a certain extent, empirical, and destitute of any settled principle. But a careful examination of all the precedent conditions in the histories of such cases exhibited the following facts:—That in all the cases in which the iodide had been productive of benefit, the patient at some antecedent period had been salivated, in some for syphilis, in others for an inflammatory or other disease; while in those cases in which no benefit was obtained by the iodide, the patient had either never taken mercury to salivation, or had suffered from syphilis or gonorrhœa, which had either been neglected or treated only locally. It appeared then that there were two predisposing causes to the same form of chronic periosteal rheumatism—the impregnation of the system by mercury, and the lurking and subtle influence of the syphilitic virus.

In my clinical lectures for some years past, I have directed the attention of students to these facts, and impressed on them that the treatment of these cases of chronic periosteal rheumatism should be based on these principles: the first form of the disease requiring the iodide of potassium, the second form, the agency of alterative doses of some mild preparation of mercury.—*Lancet, Nov.* 19, 1853, *p.* 478.

12.—*Local Treatment of Acute Gout.*—The extreme pain attending acute gouty inflammation may, it appears, be very quickly relieved by the application of pure spirits of wine. We witnessed a trial of this remedy by Dr. Goolden on a patient in St. Thomas's Hospital, who was suffering at the time agonising pain in the foot, and the result was an almost immediate relief. Dr. Goolden informed us, that he was in the habit of using it very frequently in private practice, and always with the most pleasing effect. He believed it to act by being absorbed, and not by mere evaporation. The mode of application is by a piece of lint saturated in the spirit, laid over the part, and then covered with oil silk.—*Med. Times and Gazette, Nov.* 12, 1854, *p.* 501.

13.—*Local Applications in Chronic Gout and Rheumatism.*—The ancient remedy of soda poultices for chronic gout appears to have fallen into very unmerited disuse. We have seen lately numerous cases in which very great apparent benefit

was produced by them. The quantity of soda used was one drachm mixed with a common bread poultice, and applied hot over the affected joint every night. Many cases affording illustrations of the good effects resulting from iodine-painting of joints affected with chronic rheumatism, have recently been under the care of Dr. Bennett, in St. Thomas's Hospital. This remedy also, though long known, does not appear to be so generally used as it deserves. It was, we believe, a great favourite with the late Dr. Pereira.—*Med. Times and Gazette, Nov.* 12, 1853, *p.* 502.

14.—*On the Medicinal Constituents of the Lemon.* By Dr. Cogswell.—[Lemon-juice is not always equally successful in the same number of cases of rheumatism. Dr. Cogswell thinks there may be something due to the difference he finds to exist in the constituents of the fruit. He says:]

The essential oil belonged to a class corresponding to the formula $C_5 H_4$, and including the other oils of the fruits of the Aurantiaceæ, the oils of turpentine, juniper, savine, elemi, copaiba, cubebs, and pepper. Some of them were approved remedies in rheumatism. From trials made with the oil of lemons in this disease, in flatulent dyspepsia, and leucorrhœa, the author entertained a high opinion of its therapeutical value, and thought that the chemical fact stated suggested the possibility of bringing together the various scattered evidences on the remedial efficacy of the oils of the same class, and referring them to a general law. The fresh juice, when evaporated in a water bath, yielded 8·5 per cent. of solid extract, and the ash obtained by incineration amounted to 0·27 per cent. The latter contained sulphuric and phosphoric acids, potash, lime, magnesia and iron. A controversy existed as to whether the citric acid or the potash in lemon-juice is the true medicinal ingredient. In reviewing the evidence, the author considered it an error to suppose that either would answer so well separately as united. The efficiency of the juice probably depends not on one or other of the ingredients, but on the whole combined. In using the essential oil, he gave it in doses of about fifteen minims, with two drachms of vinegar, in barley-water, always being careful to keep the bowels freely open by purgatives. If the efficacy of the juice in rheumatism depended on anything more than the refrigerant action of the citric acid, he thought the true anti-arthritic agent was probably the essential oil when present, and he repeated his views as to the necessity of establishing a definite standard for the composition of the juice.—*Lancet, March* 18, 1854, *p.* 307.

15.—*On the Efficacy of Galium Aparine in Certain Forms of Cutaneous, Scrofulous, and Cancerous Diseases.*—[Dr. Winn read a paper on this subject before the Medical Society of London. He stated his belief that the galium aparine possessed remedial powers in the above diseases which promised to equal if not surpass those of arsenic.]

When Dr. Winn first drew the attention of his professional friends to the properties of this plant, two years since, he was only aware of its efficacy in treating lepra; since then he has ascertained its benefit in other skin diseases. Dr. Winn then related the circumstances which led to his acquaintance with the galium aparine. A friend of his in Truro, who had suffered for many years from lepra vulgaris, and had taken all the usual remedies in vain, informed him that he possessed at last a remedy for his troublesome complaint in a common wild plant of which he did not know the name. Dr. Winn found this plant to be galium aparine, which grows abundantly in England, and on making further inquiries, learnt that three other persons in that district had been cured by the same remedy, one of whom had been discharged from St. George's Hospital as an incurable patient. After a botanical sketch of the plant, Dr. Winn expressed his belief that the ancients were acquainted with this plant, and that it is identical with the ἀπαρίνη of Dioscorides. On referring to some very old authorities, he ascertained that the galium was much in vogue as a domestic remedy in this country many centuries since; it was then highly extolled as a cure for cancer, scrofula, leprosy, and dropsy. An Italian writer, Giuseppe Terramosia, had published in Schmid's Jahrbucker an account of

several cases of scrofula, in which the galium appeared to produce rapid absorption of enlarged scrofulous glands. Diebach had also recommended it for phthisis, ascites, and scrofula. Richter considered it beneficial in strumous affections. Dr. Winn wished to direct attention to the fact of galium having been efficacious in glandular affections as well as lepra; it tended to confirm the theory that the two diseases were owing to the same cause—a strumous diathesis. It was also a remarkable circumstance, and one not generally known, that arsenic is highly beneficial in glandular swellings. Mr. H. Rees, an experienced and successful practitioner in the diseases of children, informed Dr. Winn that he had tried arsenic in infantile glandular affections, and proved it to be a most efficacious remedy. When first Dr. Winn used the galium, it was in the form of a decoction; but finding this mode inconvenient, he requested Mr. Hooper, of Pall-Mall, to prepare an inspissated juice, and that able operative chemist had succeeded in making a very valuable preparation. A teaspoonful of the juice equals in strength a half pint of the decoction. In ordinary cases a drachm, taken three times daily, will be found sufficient, but in obstinate affections the dose must be doubled. The juice of the galium had been analysed by Terramosia and Robert Schwartz. The former gives as its constituents—acetate of potash, gallic acid, tannin, extractive, water. The analysis of Schwartz is somewhat different. He gives its component parts thus—galitannic acid, citric acid, rubichloric acid, chlorophylle, starch. With regard to the *modus operandi* of the galium, Dr. Winn said he had little to offer but what was merely conjectural. Many of his patients were conscious of an increased flow of urine during its use, possibly from its acting on the kidneys as a depurating agent. The class of cutaneous diseases which had been benefited under his own observation was chiefly that dependent on a case of dyscrasia, such as lepra and psoriasis. He also considered these diseases as often arising from a strumous diathesis. The gentleman suffering from lepra, whose case had been referred to at the commencement of the paper, was one of a very consumptive family. In him the family disease had manifested itself under another form. It is highly important that the fluid extract be perseveringly used. Many patients have failed, no doubt, from not having given the remedy a sufficient trial. The same may be said of arsenic. Dr. Winn had tried the galium in nineteen cases of skin disease. Of these, five were cases of lepra, six of psoriasis, four of eczema, two of lichen, one of inflamed acne, and one of ordinary-coloured syphilitic eruption. In nine of these cases the benefit derived from this medicine was very striking. In one an instance of lichen circumscriptus, the effect produced by substituting the galium for other remedies was almost marvellous. With regard to the efficacy of this plant in the treatment of cancer, Dr. Winn was solely indebted to the experience of Mr. Bulley, of the Bucks Hospital, who had forwarded to him an account of three cases of cancer, in which the galium appeared to exercise a remarkable influence in arresting the disease. Dr. Winn was recently told that large quantities of galium are sold at Covent-garden annually, and that it is chiefly used by the purchasers as an external application in cases of cancer. This fact strongly corroborates Mr. Bulley's observations. —*Lancet, Feb.* 11, 1854, *p.* 155.

16.—*Treatment of Dropsy.* By JONATHAN TOOGOOD, Esq.—[Dr. Toogood, in his 'Reminiscences of a Medical Life,' gives us the practice of his old master, Mr. Dawe, of Bridgewater, in the treatment of dropsy. He says:]

"During my pupilage I have often seen patients who consulted him, with bloated and livid countenances, oppressed breathing, œdematous extremities, and other symptoms of great obstructions, with greatly diminished secretion from the kidneys, so much relieved that they have continued well for many months together, and by the occasional repetition of the same treatment, have lived for years in comparative health. His plan was to give a dose containing eight grains of calomel, with the same quantity of jalap, and one grain of emetic tartar in the morning. This acted violently on the stomach and bowels, and used, according to his own expression, 'to ruffle his patient a good deal;' during and after its operation he directed a little wine or other cordial; afterwards the patient generally fell asleep, and awoke relieved. He then prescribed three grains of powdered squills, with two of digitalis, every night for six successive nights, and a mixture with bitter infusion, and small

doses of tincture of squills and spirit of nitre, twice a day. The digitalis was then omitted, and the other medicines continued for six nights more; and if the symptoms were not much relieved, the digitalis was resumed again. If the case was unusually obstinate, the drastic dose was repeated, and sometimes the dose of the digitalis was increased from two to three grains. But this was rarely done; very little attention was paid to the origin or cause of the disease; the great object was to 'unload' the patient."—*British and Foreign Medico-Chirurgical Review, April*, 1854, *p.* 483.

17.—REMARKS ON CHRONIC INFLAMMATION.

By Dr. C. Handfield Jones, F.R S.

[When we have very little exact knowledge of the real causative condition of a morbid action, we are apt to class it under the term chronic inflammation. Cirrhosis of the liver, Bright's disease, white pericardial thickenings, &c., we are apt to regard as slow inflammatory processes in the respective organs. Dr. Jones observes:]

I would wish to name all the morbid changes in which the character of growth—of new formation—decidedly predominates over that of inflammation, according to their principal feature. I would call them simply fibroid thickenings, or fibro-cellular growths, and thus avoid giving them a name, either merely trivial, or of doubtful correctness. The matter is not one of nomenclature merely; it has important bearings on practice. Suppose a case intrusted to our care in which the liver was found considerably enlarged, projecting below the ribs, and that we have satisfied ourselves that the enlargement depends neither on engorgement with blood, nor on fatty change, nor on bacony deposit. The probability, then, is very strong that it is in a condition of cirrhosis, the fibrous tissue between the lobules being prodigiously increased in quantity. Can we hope by the administration of mercury or iodine to remove this deposit? If it were simply inflammatory, the attempt might be successful; but as it is a growth, one may confidently predict that it would be fruitless if not injurious. The same remark will apply more or less completely to any of the other instances before mentioned.

It seems to me that observers have not sufficiently held in view, although generally admitting as a matter of course, the vast predominance of that unknown force, call it what we please, which determined and still determines that here bone and there muscle, and in another spot nerve, and in another tendon, should be formed. There is some such force, and it is certainly liable to be deranged, and its derangements are just those which are most difficult to rectify. This perversion of the nutritive act (to borrow Andral's phrase) is that which determines the origin and growth of a cancerous, or a fibrous, or any other kind, even of a fatty tumour. It is the same, I believe, which causes the textural changes above enumerated, and some others which might be added, and not inflammation, which of itself and in its best marked form, produces no exudation which is capable of growing and enlarging. It is this property of vegetative increase which makes the removal of new formations and all allied productions so difficult: mere inflammatory effusions we can melt down and get absorbed, but these resist our "sorbefacient" remedies with the same persistence almost as the natural tissues.

The degenerative process which constitutes true morbus Brightii does not quite come under the above class of morbid changes. The best observers are agreed that production of new interstitial tissue constitutes no essential part of the morbid action. Most writers incline to view it as a nephritis of more or less chronic character; but the great name of Prout can be cited in support of the view that the substratum of the process is something essentially different from inflammation. My own observation has always inclined me to adhere to this opinion. In the enlarged, often mottled kidney, we see simply a derangement of nutrition, producing hypertrophy of the epithelium concurrently with malperformance of its function. The albuminoid cell-growth does not undergo its normal changes; and instead of forming the secretion, it collects in the tubes, either choking them up and distending them, or getting washed out in the stream from the Malpighian tufts. In further stages, or in more rapid degrees of change, the tubes and epithelium break up into mere detritus. In all this process we see really nothing to justify us in considering

it as inflammation. So, also, in the atrophic form, the small dwindled kidney, we find no satisfactory evidence of anything else than a gradually supervening impairment of the nutritive process. The epithelium wastes, and the tissue decays, and collapses; thus far is certain; but how little is there to show that this is dependent on previous inflammatory disease? On the contrary, the frequency of recovery from acute congestion (as that of scarlatinal dropsy) shows that inflammatory and degenerative actions are widely different in their nature and results. The one exhibits the perturbation of healthy action by an intervening cause, the other is the decay of vital power from innate or induced weakness.

The subjoined scheme illustrates the transitions that seem to exist between two of the chief types of disordered nutritive action. In inflammation of acute sthenic character the hyperemia is a main element, and the exudation is non-vegetative. In cancer (say encephaloid) there is no apparent or necessary hyperemia, but the exudation is endowed with a vegetative power of most active growth. In simple deposit, as of tubercle or bacony matter, there is neither hyperemia nor manifestation of vegetative power; the sole morbid change is the deteriorated state of the plasma.

Inflammation.		
Acute sthenic.		*Encephaloid cancer.*
Subacute.	Tubercle—bacony matter.	Fibrous tumour.
Chronic.	*Simple deposit.*	Fibroid thickening.

—*Association Medical Journal, Dec.* 9, 1853, *p.* 1077.

18.—*Case of Purpura Hemorrhagica treated by Turpentine.* By Dr. George Willis.—[A gentleman, aged 22, on Nov. 9th, while coughing, expectorated a large quantity of dark coloured blood. The respiratory sounds were natural, but the limbs were found covered with the peculiar eruption of purpura. He was an excessive smoker, and was generally from this cause in a state of salivation.]

The treatment consisted in an acid mixture, and a dose of aperient pills; the bowels being sluggish. For the following three days this treatment was continued without change, except that a grain of ipecacuan was added to the pills. The hemoptysis subsided.

On Nov. 13, I was informed by the patient that, during the night, he had suffered severe pain in the testicle; that this passed off, but that, on voiding his urine, he had found it dark in colour. On examining it myself, I detected that a large quantity of blood had been thrown off with it.

On Nov. 14th, I ordered ten grains of gallic acid to be given with each dose of the mixture, and an aperient draught, as the bowels had not been acted on for two days.

Nov. 15th. The bowels have been relieved, but the urine continues of the same character as yesterday. The blotches on the tongue and gums have disappeared, but two small ones have presented themselves on the upper lip, and on the side of the nose. The treatment to continue.

Nov. 16th. No improvement. Treatment changed. The acids to be discontinued, and replaced by turpentine in the following form:—

℞. Spiritus terebinthinæ ʒij.; sacchari albi, pulveris acaciæ, āā ʒij.; tinctur. lavandulæ comp. ʒj.; aquæ menthæ piper. ad ℥viij. M. Fiat mistura.

Of this he took an ounce three times a day.

Nov. 17th. The urine is clearer. Oysters to be taken as diet, and milk to be drunk *ad libitum*.

Nov. 20th. The turpentine has been continued to this date with the best effects. The urine has acquired its healthy character, and the patient expresses himself as feeling quite well: he is allowed to get up, and, having no dislike to the mixture, continues to take it.

Nov. 23rd. The ecchymosed spots have disappeared generally, leaving merely a pale yellow hue, marking their outline, like that which succeeds on a common bruise. The turpentine was now stopped, and a few drops of the tincture of the muriate of iron, twice daily, prescribed in its place, with a compound rhubarb pill as an occasional aperient. Up to this date, there has been no return of the symptoms.

Observations. I have not much to say in comment on this case, although I do not doubt that it might form a text for a long and valuable disquisition. I shall only direct attention to three points:—

1. To the extended character of the local manifestations of the blood disorder, as indicated by the copious eruption, and by the free exudation of blood from the mucous membranes of the air passages, kidneys, and bladder.

2. To the cause of the diseased condition of the blood. Was it not the excessive smoking? For my part, I see no other cause. I believe that the fumes of tobacco, if long inhaled, possessing as they do narcotico-irritant properties, are quite as capable of reducing the consistency of the blood as some other agents of the same character; and that the essence of purpuric symptoms is a fluid or defibrinated condition of the blood.

3. The treatment of the case is a good illustration of the value of turpentine in purpura, and bears out Dr. Neligan's recommendations on this subject.—*Association Med. Journal, Feb.* 3, 1854, *p.* 110.

19.—ON THE ABORTIVE TREATMENT OF SMALL-POX BY ZINC PLASTER.

By Prof. J. Hughes Bennett, Edinburgh.

[On a former occasion, Dr. Bennett called our attention to the effects of mercurial plasters, thickened with starch, applied to the face in small-pox. Salivation was, however, occasionally produced, and it is questionable whether the mercury was essentially necessary.]

There is a close analogy between the mode of healing of wounds and ulcers, so well described by Dr. Macartney of Dublin—that is the so-called "modelling process"—and what takes place in the ectrotic treatment of small-pox. In the former cicatrices are far less liable to be produced than after healing by the first or second intention, and in the latter the pitting or cicatrization is prevented. The artificial plaster therefore takes the place of the natural scab or clot of blood, protects the parts below, and enables them to heal slowly but more perfectly than if exposed to the air uncovered and uncompressed by superjacent crusts. If this be the correct theory of the ectrotic treatment, the mercurial might be discarded, and any kind of plaster which would concrete on the face might be expected to produce the same beneficial result. This session I determined to try the effects of a plaster, and after two or three failures have succeeded in procuring one that answers perfectly. The first case I treated with simple lard, thickened with starch and powdered charcoal, but it was so little coherent, that the patient, during the night, rubbed it off on her pillow or with her hands, and on her recovery she was pitted all over. In another case I tried carbonate of magnesia saturated with oil. But this also failed. In a third case, however, common calamine (*zinci carbonas*), saturated with olive oil (proposed by Mr. Bird, one of the clinical clerks), formed a coherent, tough crust, which remained on the face, and was found to answer well. Three cases of natural small-pox have been since treated in this manner with the result, not only of preventing the pitting, but of diminishing the local and general symptoms, exactly in the same manner as I have formerly detailed, as being the effect of the mercurial plaster. The following is one of these cases.

Alexander Ross, æt. 13, never been vaccinated, was seized with shivering on the 7th Jan., followed by the usual symptoms of fever. Entered the Infirmary on the 9th, when a few papules were observed on the face and arms. On the 12th the face was thickly covered with vesicles, which from their closeness would certainly have become confluent. The mask of calamine and oil was now applied. The disease ran its usual course, the eruption being confluent on the arms and trunk. Throughout the progress of the case the application of calamine saturated with oil preserved a firm and coherent crust, and was renewed from time to time. The patient experienced no smarting of the face, there was no swelling of the eyelids, no purulent discharge, or local unpleasant symptoms of any kind. The secondary fever was tolerably smart, delirium being present two days. On the 22d the mask came off, leaving a clean smooth surface, free from all trace of pitting. Dismissed quite well on the 26th.

The following formula, after numerous trials, has been found to constitute the most efficient plaster:—Carbonate of zinc, three parts; oxide of zinc, one part; rubbed in a mortar with olive oil to a proper consistence.—*Monthly Journal of Med. Science, April*, 1854, *p.* 301.

20.—*Small-pox and Vaccinia.*—Mr. RICHARDSON related the case of two children who had been vaccinated by matter obtained from the same source. In one, the vaccine vesicle went through the ordinary stages; in the other, small-pox, in a benign form, went through its entire course. He referred also to another case. Two children were vaccinated from the same points: one presented all the common appearances resulting from the process; in the other, small-pox appeared, and went through its usual stages. He mentioned these cases to show that medical practitioners might be occasionally blamed for performing imperfect vaccination, without any ground for such a charge.

[The above is interesting to the medical practitioner, as he frequently finds himself blamed by patients for vaccinating their children with what is called *bad matter*. We suspect, however, that the second case was not real small-pox, but *cow-pox* more or less diffused over the body, and very much resembling mild small-pox. We have repeatedly noticed this in our own practice.]—*Lancet, March* 25, 1854, *p.* 337.

DISEASES OF THE NERVOUS SYSTEM.

21.—PRACTICAL OBSERVATIONS ON THE CURE OF EPILEPSY.

By DR. JOSEPH WILLIAMS.

No specific has ever been found for epilepsy, and probably never will, on account of the variety of causes from which the disease arises.

Case. Mr. P., aged 37, married. His first fit occurred on the 11th June, 1847, and for this and some succeeding fits he was bled, and put under antiphlogistic treatment by different practitioners. Afterwards he tried several physicians, who prescribed a variety of remedies, but without relief. On the 2nd November, 1852, his condition is thus described:]

He is heavy, lethargic, depressed, and desponding, his eyes fixed on the ground; his spirits so weak that he can scarcely reply to the ordinary questions respecting his general health without sobbing. *His whole aspect is most discouraging, and he feels that he will not recover.* His temperament is lymphatic and bilious, yet with a very thick head of hair, and a somewhat projecting forehead; he complains of oppression and weight in the head. His neck is short, and for a man of his age he is decidedly stout, and at the same time leucophlegmatic; the tongue is slightly furred; the bowels are daily opened; the pulse is soft and small; his countenance is pale, bloated, and bilious; his urine is sometimes high-coloured, and stains his linen. He appears to me now to be inactive and indolent. His appetite is generally good, and he eats *meat* suppers, but his digestion is imperfect. He has never suffered from worms, but frequently is annoyed by itching of the nose, with a sense of weight at the posterior nares, and at the same time has considerable irritation about the rectum. He always becomes pale before the fits occur. Ordered mercurial pill, twelve grains; compound colocynth pill, half a drachm; extract of henbane, one scruple; to be divided into twelve pills, two to be taken occasionally at bedtime. Sulphate of zinc, twelve grains; extract of camomile, two scruples; divide into twelve pills; one to be taken twice a day. To take a dose of cotyledon umbilicus daily, immediately after the first fit. Whenever he looks particularly pale, and feels the irritation in the nose and rectum, apply a mustard poultice to the nape of the neck, and administer an ounce of purified spirits of turpentine in half a pint of warm gruel, as an enema, to be retained as long as possible. Diet, meat once a day, with a proportion of green vegetable; no ham; no bacon; one pint of beer; cocoa and coffee; no tea. To walk one or two miles every morning, before or immediately after breakfast, and the same distance at least in the afternoon or evening. To pay great attention to the skin. He has never before been advised to take systematic exercise.

Dec. 9th. His countenance is brighter; he is less nervous; his head less oppressed; his appetite still good; and he digests his food better; he walks with greater ease, and begins to enjoy the exercise. The pills seem to give him vigour, and he feels stronger. His pulse is decidedly more firm; the tongue cleaner. Two days since, not feeling so well, with irritation about the nose and rectum, the turpentine enema was administered, and he "*soon felt warm all over, and decidedly relieved.*" He has *not* taken the cotyledon umbilicus, but as this was about the time for his usual attacks, I was particularly anxious, and therefore recommended him to take, every morning before breakfast, one teaspoonful of Hooper's fluid cotyledon umbilicus, and ordered sulphate of zinc, twenty-four grains; extract of camomiles, half a drachm; divide into twelve pills, one to be taken twice a day. To watch narrowly for the coldness of the nose; for the nasal and anal irritation; for the pale and livid countenance; and on the first approach of these symptoms, to rouse the system by the turpentine enema. In diet as before, with the same systematic exercise.

Jan. 11th, 1853. He has been taking his medicines regularly as prescribed; walks daily two or three miles before breakfast, and the same distance in the afternoon; has no attack whatever; has had recourse to the enema once since I last saw him. He complains of the expense of Hooper's cotyledon umbilicus. I believe he paid £1 4s. 6d. for the last medicines ordered by me! I therefore recommended him to go to Davenport's, in Great Russell-street, who has given great attention to the preparation of vegetable juices and extracts; and I at first ordered two drachms of extract of cotyledon umbilicus, divided into twenty-four pills, two to be taken daily before breakfast. But from a subsequent communication with Mr. Davenport, at the next visit, on the 2nd of February, I substituted for the pills the following: juice of the cotyledon umbilicus, a pound, as prepared by Davenport; a teaspoonful to be taken every day before breakfast, in a wine-glass of water; persisting, twice daily, with the zinc pills, and taking occasionally one or two of the aperient pills, not neglecting the turpentine injection.

June 13th. Since the last visit, I have seen Mr. P. several times, and the change is indeed most remarkable. He is active, happy, cheerful; his whiskers, before neglected, now well trimmed; his gait erect and firm; his eye intelligent; and having had no attack since last October, he now considers himself cured. He has, however, not relaxed in regularly adhering to the prescribed rules up to this period, and has never allowed more than a fortnight to elapse without using the turpentine injection.

Nov. 21st. I have this day received a letter from him, stating that he is quite well, and wishing to know if he may leave off all remedial means. He has had no return whatever of the fits. He takes two of the aperient pills once a week; the cotyledon, one teaspoonful twice a week before breakfast, with a zinc pill on the same day. He has only used the turpentine injection twice or three times since July.

Previously to being placed under my care, the fits had been gradually augmenting in number and severity; the paroxysmal attacks being of the most destructive and violent character, with suffocative respiration and horrible convulsions, continuing, with but slight intermissions, for six, fourteen, and even twenty-four hours; the disease evidently gaining ground, devastating his system, and shattering his intellect; absorbing five, six, and even seven days, to partially recover from the consequent prostration; his very memory and judgment being continuously impaired.

I was requested by some medical friends, in this, as in some other cases, to try the effects of one remedy at a time; but when a cure is actually progressing, I should do so with much reluctance. The cotyledon, for instance, given alone, often fails; but when coincidentally exhibited with zinc, succeeds, even when zinc, previously administered alone, had also failed, as instanced in this case. I would invite attention particularly to such points; also to the continuous and systematic use of large doses of the mineral acids, thereby altering the very character of the urine and the blood; recommending, also, in many cases, to try the full effects of producing a reflex action by stimulating the rectum.

Epilepsy does not depend upon one specific cause, and consequently no specific can ever be expected for its cure. A rational investigation must be made as to whether there is exalted sensibility or atonic lethargy; whether there is congestion

or repletion; whether each organ regulates its function; and it is only by properly appreciating and by minutely attending to each symptom, that a cure can reasonably be expected.

This case is highly instructive. I would not place too much confidence in any one of the remedial means employed, but I would strongly refer to the sulphate of zinc, to the aperient with the mild mercurial, to the turpentine enema, to the nutritious but not over-stimulating diet, to the diminished evening meal, and to the systematic exercise.—*Lancet, Feb.* 4, 1854, *p.* 128.

[The following additional information on this subject, is given us by Dr. Williams in the subjoined case.

Case. A young man thought he had worms, and took a wine-glassful of spirits of turpentine. This was followed in due time by repeated attacks of epilepsy.]

He has been subjected to a great deal of prolonged treatment, both at home and abroad, and the nitrate of silver has been largely given, but without any benefit.

His exercise is irregular, at one time excessive, and then again neglected. He lives well, as most young gentlemen do who can command the luxuries of life. He is, however, to live by rule, and to take the exact amount of daily exercise prescribed by me; he is to act gently on the bowels, with the following pill, and for the present to have two daily evacuations. Mercurial pill, one scruple; compound colocynth pill, two scruples; make into twelve pills, one to be taken occasionally, as may be necessary; and take of the juice of the cotyledon umbilicus (Davenport's), one teaspoonful daily before breakfast. Avoid stimulants, suppers, balls, theatres, &c., for the present; eat a *little less*, and take a proper proportion of vegetable diet.

[This treatment was soon of use. The dose was raised to two tea-spoonfuls daily, with one aperient pill occasionally. The attacks seem to have been completely averted. After this Dr. Williams goes on to remark:]

When once epilepsy has occurred, an individual is more or less predisposed to its recurrence, and any physical or metaphysical excitement, not sufficient of itself to primarily produce the disease, may reinduce it, when it has been once developed. An interval of ten, fifteen, and even twenty years may occur, but then the attack may generally be clearly traced to some very obvious cause, or to some dietetic or hygienic error, as clearly shown in several cases which have come under my notice.

The prophylactic and curative effect of the cotyledon in this individual case must be taken as the exception rather than as the rule, and practitioners will be very much disappointed if they expect it to be uniformly successful. I have just received a letter from the country evidencing how useless it and all other remedies have hitherto proved in controlling the more severe paroxysms; still the cotyledon is a remedy which does undoubtedly occasionally effect a cure, and especially in the milder forms of epilepsy.—*Lancet, March* 25, 1854, *p.* 331.

[Dr. W. H. Ranking, of Norwich, does not at all agree with Dr. Williams in his faith in this medicine. He says:]

As far as my own experience goes, I should pronounce it utterly worthless. I have given Hooper's preparation, carefully and perseveringly, in more than thirty cases, public and private, in patients of all ages, and in not a single instance could I trace the smallest benefit to its operation. Many cases certainly were of an unmanageable character, and derived no benefit from any other medicine; but I have notes of three or four in which a most marked improvement has followed the use of the oxide of zinc in increasing doses, after several weeks had been, as I consider, wasted in the employment of cotyledon.—*Med. Times and Gazette, April* 1, 1854, *p.* 328.

[Mr. Hooper remarks on this subject, that many cases equally successful have been related to him; but he thinks Dr. Williams has evidently been misled about the comparative strength and value of the preparations of the drug. He says:]

When patients get better they mostly complain of the doctor, or give up the physic, or grumble grievously at paying for it. The last was the case in this instance. The consequence was, that a preparation *professedly* cheaper than mine was prescribed. It invariably happens that if a chemist introduces an useful preparation, he is sure to be honoured by plenty of imitations, especially in the *cheap* way. All are of course prepared after Mr. So-and-so, when in point of fact all are as different as possible. The preparation of cotyledon umbilicus which Dr. Williams prescribed was *supposed* to cost considerably less than mine; whereas, if

concentrated to the same extent, it would be just the reverse. The patient, however, was not quite straightforward in his representations to the doctor. He complained of the difference of price, but said nothing of the difference of quality; for whilst the preparation I supplied was thicker than treacle, of a dark green hue, and very highly concentrated, the lesser priced was as fluid as sherry, and of as light a colour. The druggist who sold it advertises the "solid and fluid extracts, and also the preserved juice, as recommended by Mr. Salter." I wrote to Mr. Salter on this subject, and in reply he assured me that he knew nothing whatever of the party or of his preparations.

When I first gave my attention to the inspissated juice of cotyledon umbilicus, I sent to Mr. Salter the following minute:—Six pounds of the plant yielded two pints and a quarter of the fresh juice, and this was reduced by the process of inspissation to two ounces and six drachms. Mr. Salter in consequence published the doses thus:—Fresh juice, one ounce, twice daily; Hooper's inspissated juice, half a drachm twice daily. This appeared in the 'Medical Gazette' for March 2nd, 1849. It will be observed that the inspissated juice is sixteen times stronger than the fresh juice. I note this particularly; for upon its concentration, as well as on that of all analogous preparations, such as sarsaparilla, taraxacum, &c., the price must of necessity depend.—*Lancet, Feb.* 11, 1854, *p.* 176.

22.—ON THE EFFICACY OF SMALL DOSES OF STRYCHNIA IN NEURALGIA, AGUE, DYSPEPSIA, &c.

By Dr. F. E. Wilkinson.

[Dr. Wilkinson corroborates Dr. Marshall Hall's statement of the value of strychnia, dissolved in acetic acid, in the treatment of epilepsy. He observes]

My method has been to dissolve two grains of strychnia in one ounce of phosphoric acid of the London Pharmacopœia—a very speedy and certain solvent, and also possessing, doubtless, the additional excellent property of assisting the good effect of the strychnia upon the brain and nervous system. Of this solution, in cases of prolonged dyspepsia, in neuralgia, indeed in many states of the nervous system requiring tone, it has been usual with me to administer, after the state of the secretions has been attended to, a dose, consisting of five minims of the above solution, three or four times daily, either alone or combined with some other appropriate remedy, according to the nature and complication of the case. This medicine has also a remarkable effect in ague. During a four years' residence at Cambridge, I had opportunities of seeing the treatment of a vast number of cases of intermittent fever, but in no one instance, as far as my memory serves me, was recovery nearly so rapid as I have seen it after administration of this powerful remedy.

I have had early this year several cases of quotidian occurring among the poorer workmen of the crystal palace, who, during the wet weather, were in the habit of pursuing their labour at night, and in places where they were much exposed to the damp, and in all these cases the disease has succumbed to doses of strychnia, of about one-twenty-fifth to one-fiftieth of a grain, and this without the use of any other medicine, excepting a dose of calomel and opium, followed by a purge of compound jalap powder to commence the treatment of the case.

I cannot help being strongly of opinion that this medicine would be of extreme value in cholera, from the great power it has over the nervous system; more especially if combined with the sulphuric acid treatment, which has been recommended so frequently in the pages of 'The Lancet.' Nothing would be so likely to relieve as the combination of the astringent with the nervine tonic. I know that obstinate cases of serous diarrhœa, which resist almost every other remedy, yield to this combination; but I have had no opportunity of trying its effects in cholera, which I should, however, not fail to do, if, unfortunately, the disease again presented itself.

As a substitute for quinine, as a general tonic in most cases that present themselves, this solution of strychnia is to be recommended, as it does not produce the oppression and inconvenience that persons are liable to whilst taking quinine, but, on the contrary, generally produces a slight feeling of exhilaration which is not

rapidly transient; at the same time, by improving the nervous tone, improving the state of the secretory apparatus.

I subjoin a few cases illustrating these remarks, whilst I know many friends who could readily corroborate these facts from cases occurring in their practices.

Neuralgia.—July 11, 1851. Mrs. P., married, aged thirty-two; pale and emaciated. She has been for some years the subject of neuralgia, which attacks her whenever she takes cold, and occasionally quite incapacitates her from attending to the duties of her family. She is now suffering acutely from pain and the loss of rest. The bowels being confined, the following was ordered:—Calomel, three grains; conserve of roses, sufficient quantity to make into a pill. Liquor of strychnia (two grains to an ounce), twenty-minims; sulphate of magnesia, one ounce; spearmint water, six ounces. To take one-fourth three times a day.

12. The pain seems relieved this afternoon, but the patient is still suffering from loss of rest. To take belladonna, a quarter of a grain; extract of hyoscyamus, four grains: mix, and make into a pill.

13th. Slept well; feels better. The medicine has acted too freely upon the bowels.

14th. Is quite free from pain, but still a numbness exists in the old place. Continue the mixture.

15th. The pain has entirely left; feels more cheerful and free from pain than she has done for many months; appetite improving.

From this time the patient continued free from pain, and gradually recovered a great amount of health and strength under the continued use of the above medicine, combined latterly with some tincture of iron.

Case 2, 1851. C. P. In this case the disease had been existing more or less constantly; the pain scarcely leaving her entirely for some months. Is now suffering from bilious diarrhœa. After prescribing a dose of calomel and opium, followed by a rhubarb purge to cleanse away irritating matter, I prescribed iodide of potassium, two grains; liquor of strychnia, five minims; water, one ounce; three times a day. After taking the medicine for some days, the pain entirely ceased. The treatment was continued for six weeks, and she has had no return of the symptoms for now nearly twelve months.

In Ague cases.—Jan. 5th, 1852. J. W. was taken ill yesterday, just before leaving work, with violent pain in the left side, and with uncontrollable shivering, followed by fever, with some amount of delirium, and then by profuse perspiration. Has not felt quite well for some time. Is suffering from the cold stage of intermittent at the present time; looks blue and pinched. Ordered calomel, three grains; Dover's powder, ten grains; to be made into a powder, and to be taken immediately. A compound jalap powder in the morning. Slept pretty well: medicine acted freely. Shivering returned in the morning. Altogether the patient does not think himself improved. Liquor of strychnia, forty minims; water, six ounces, to be made into a mixture, one-fourth to be taken every four hours.

7th. The time of accession of the paroxysm was later, and the attack less violent.

8th. Continues improving.

From this time the patient gradually improved, the dose of strychnia being gradually diminished, and on calling to see him on the 14th, he had returned to work, feeling himself quite well.

Dyspepsia.—J. S., aged thirty-five. Has been unwell for a length of time; has tried many things that have been prescribed for him, but without any benefit, and he believes very often with the reverse effect, and almost despairs of getting well. Has been under homœopathic treatment, but without advantage, and all the means he has used have been unsuccessful. Has dimness of sight; headache; unpleasant taste in the mouth in the morning; always sleepy; appetite capricious; sometimes feels hungry, but never enjoys his food; bowels at all times constipated; sleep at night disturbed. Prescribed a plain, simple diet, and to take the following medicine:—Liquor of strychnia, twenty minims; sulphate of magnesia, half an ounce; peppermint water, six ounces: to be made into a mixture. One-fourth to be taken three times a day. Also, the following pill:—Mercury and chalk, three grains; powdered ipecacuanha, half a grain; extract of hyoscyamus, sufficient quantity to make into a pill.

The medicine having been taken for some days, and produced the desired effect

upon the secretions, I prescribed liquor of strychnia, thirty minims; peppermint-water, half a pint: one-fourth to be taken three times a day: aloes, two grains; to be taken occasionally before dinner.

On seeing him three days after, he described himself as better in health and spirits than he had ever been before in his life; for the last two days he had been a different being; a load seemed removed.

A week after, he continued remarkably well, ate, drank, and slept well, and enjoyed his food and exercise. He did not wish to relinquish his medicine, as each dose seemed to relieve him.

From this time he went on well; but although now he has discontinued taking his medicine very nearly eighteen months, he still retains some by him, which he takes occasionally.

These are a few out of many cases giving an average sample of the beneficial effects of this medicine: I have a number of cases which have been thus treated, but cannot say that my legitimate confidence has been ever overthrown.—*Lancet, Dec.* 24, 1853, *p.* 601.

23.—ON SLEEPLESSNESS, OR DISTURBED SLEEP, WITH ITS ATTENDANT SYMPTOMS, PALPITATION, LASSITUDE, LOSS OF APPETITE, &c.

By Dr. George Johnson.

[One of the chief causes of this state of the system is over-work, both of body and mind, but especially the latter. Everything must be done to warn the patient and enforce a more suitable arrangement of his labours; nevertheless, we should studiously avoid seriously alarming him, as this itself may increase the complaint. It must be a part of the duty of such patients to take a due proportion of daily exercise in the open air, and]

When all that is possible has been done for avoiding the causes of mental worry, and when all needful advice and encouragement have been given, we have next to direct our attention to the consequences, some of which will continue long after their exciting cause has ceased to operate; while others are perpetuated by some persistent and unavoidable source of anxiety. Now, the first and the most frequent consequence of over-work or anxiety—the one, too, which, more than any other, is productive of further mischief—is restlessness, or some form of disturbed and unrefreshing sleep. And the chief cure for this, after the cause has been as much as possible avoided, is an opiate at bed-time. So far as I can see, it is of little importance what preparation of opium or of morphia is used. For hospital patients I generally order the compound soap pill; one advantage of which is, that its name does not indicate its opiate nature. The dose must vary according to circumstances. In ordinary cases, five grains of the pill, *i. e.*, one grain of opium, may be taken every night at bed-time. In a case of much excitement, with extreme restlessness or a threatening of delirium, the dose must be double or treble that which I have mentioned. In such cases, however, the opium would be best given in a liquid state,—in the form of tincture, or the solution of the muriate or acetate of morphia.

The time for the continued exhibition of the opiate must vary according to circumstances, and will be much influenced by the success of the treatment. The object is to break the habit of dreaming restlessness, and to procure sound and refreshing sleep. In many cases this object may be attained by the nightly repetition of the dose for one week. It is seldom necessary or desirable to continue the medicine for more than a month, though in some cases it may be expedient and beneficial to extend the period considerably. In many cases I have found that the beneficial effects of the medicine have been immediate; the patient has slept soundly, the distressing dreams have ceased, the appetite has returned, and all the symptoms which depended on loss of sleep and loss of appetite have quickly disappeared. After a few nights of sound sleep have been procured by the opiate, the dose should be discontinued, and in most cases the patient will continue to sleep as well without the medicine as with it. There is, probably, no one medicine which has the power of quickly removing such a multitude and a variety of distressing symptoms as opium, when its action is really favourable, in the cases to which I refer. It is not

however, to any specific efficacy residing in the opium, but to the marvellous influence of sleep in refreshing both body and mind, that the benefit is really due. The value of the opiate consists in the fact, that, on the whole, it is the safest and most certain means of procuring sound sleep.

The use of opium as a medicine is sometimes attended with unpleasant consequences, and it does not always effect what is desired. I proceed now to indicate some of the unfavourable results of the opiate treatment, and the precautions which ought to be observed in the use of the medicine. One of the most frequent discomforts attending the use of opium is a feeling of nausea and faintness either with or without headache in the morning after awaking. The best cure for this is a cup of coffee or tea, with some solid food, followed by a walk in the open air. In many cases the opium, although at first it may disagree, yet produces no unpleasant effect after the second or third dose.

The nervous patients who require the method of treatment which I am advocating, almost invariably suffer from constipation,—a torpid condition of the bowels being, in fact, one of the natural consequences of the general debility which characterizes the patients in question. Although the immediate effect of the opium is to increase the constipation, yet its ultimate tendency is to restore the regular action of the bowels by means of the invigorating influence derivable from sound refreshing sleep, and an increased appetite for food. The temporary constipation may readily be obviated by an occasional mild aperient—a seidlitz powder, or a compound rhubarb or colocynth pill. The inconvenience arising from the astringent effect of opium upon the bowels is so easily met and removed, that it would never deter me from giving the medicine in any case which appeared to require it.

One of the most serious objections to the use of opium, is its tendency, in some cases, to produce an effect the direct opposite to that which we require,—to produce wakefulness and excitement, instead of sleep and composure. It is only in a small proportion of cases that this difficulty arises. It may sometimes be overcome by changing the form of the medicine, or by increasing the dose of the opium or morphia, and, in other cases, by combining the opiate with a moderate dose of antimony —James's powder, or tartar-emetic—a combination which has been strongly recommended by Dr. Graves, to procure sleep and check delirium in many cases of fever. It must, however, be admitted, that some patients cannot tolerate opium in any form or in any dose; and nothing can better show the value of this drug than the difficulty of finding a substitute for it. We may try henbane and hop, and these will sometimes effect our object; but their action is very uncertain in comparison with that of opium. (Since this lecture was delivered, I have found reason to believe, that one of the best substitutes for opium in the cases referred to, is chloroform, in doses of from ℥x to ℥xx., made into a draught with mucilage.)

It is well to remember that an opiate enema will sometimes procure refreshing sleep when opium, in any form, administered by the mouth, is either quite inoperative or productive only of distressing excitement or sickness.

But may not the frequent repetition of an opiate dose become a necessity for the patient? May we not be instrumental in making him an opium-eater? I admit that the danger of such an evil, if real, would be a very fearful one. There are few results of medical practice which I should regret more than the reflection, that I had in any way contributed to render a recourse to narcotics or stimulants habitual or necessary to a single patient. I believe, however, that a cautious use of opium is attended with little danger of leading to so terrible an abuse of the drug.

In giving opium to hospital-patients, I never tell them what they are taking; and one reason for preferring the compound soap pill, in such cases, is, as I before mentioned, that the nature of the medicine is not apparent from the prescription, if the patient should read it. The opium should be discontinued as soon as it can be dispensed with,—as soon, that is, as restlessness and frightful dreams have ceased to harass and exhaust the patient. The rapid convalescence, and the renewed health, and strength, and spirits, which are wonderfully promoted by securing sound and refreshing sleep, will generally enable the patient at once, and without difficulty, to dispense with the use of opiates. I should withhold opium from a patient who neglects any directions which I have given him as to exercise, diet, and the general management of himself, and whose restlessness and nervousness appear to result from such negligence. In other words, I would not encourage a patient to trust habitual-

ly to opium for the removal of discomforts which might be avoided by the exercise of self-control, and by obedience to natural laws.

The cases in which the opiate treatment is most rapidly and completely successful are those in which the nervous symptoms are the result of some past grief, or anxiety, or fatigue, the impression of which remains, and is perpetuated by the patient's inability to obtain refreshing sleep. In such instances, a few nights of sound sleep, procured by means of the opium, rarely fail to effect a rapid cure, and this too, after the nervous symptoms have continued for many months, or even for years. The first, third, and fifth cases, the particulars of which I gave in a former lecture, are good examples of the beneficial effects of the plan of treatment to which I refer.

Another class of cases in which equal benefit is often derived from a similar method of treatment, are those in which nervous restlessness has been induced by continued overwork, whether mental or bodily. In such instances, it is obviously desirable, as I have before intimated, that the patient should rest, or diminish his labours, if possible; but the patient may assure us that he has no alternative but to go on with his work, or to lose his employment, and with it his means of living. In such a case we may often prevent over-worked men and women from breaking down, and enable them to go on in comparative comfort by giving an opiate nightly for a week or two. Refreshing sleep will be induced, the appetite will return, and, as a consequence, the strength and spirits will revive. And the strength and spirits thus obtained are not false and artificial in the same pernicious way as the stimulus obtained from alcohol, by which too many are tempted in the circumstances to which I have referred. The temporary help which a languid body or mind derives from alcohol is generally followed by a corresponding amount of depression, and with this there comes a craving for a repetition of the stimulant. Another bad result of the too frequent use of alcohol is a loss of appetite and an impaired power of digestion. Now, the effects of the opiate plan of treatment, conducted with the precautions to which I have before alluded, are in most respects the opposite of those produced by alcoholic stimulants; for we seek, by means of opium, a natural remedy for fatigue, that remedy being sleep, which brings with it a desire for food, and the power to digest it. Alcohol is taken for the sake of the immediate stimulus; the subsequent depression is the drawback upon its utility as a means of keeping up the working powers. The object in giving opium is to obtain, not its stimulant effects, which are comparatively slight and transient, nor immediately its composing influence, but the refreshment which follows the latter, and which has nothing corresponding with it among the ordinary consequences of alcoholic stimulants.

My objections to the *abuse* of alcohol as a stimulant do not of course apply to the use of wholesome wine and beer as articles of diet by those who require them, and who appear to derive benefit from them. Moreover, there are certain cases of nervous disease in which some form of alcoholic stimulant may be given with great advantage, either alone or on conjunction with opium. I refer to cases of extreme restlessness, either with or without delirium and whether resulting from intemperance, or from grief, or watching, or fatigue, when the bodily powers are very feeble, although under the mental influence there may be great excitement. In these cases, repeated large doses of opium sometimes fail to procure sleep, but appear rather to have a depressing influence: the patient's skin becomes cold and is bathed in perspiration, while the delirium and excitement continue. In such circumstances, the continued use of the opium is not only useless, but injurious and dangerous, and the surest mode of arresting the collapse, and of procuring sleep, is to give freely either wine or brandy, or, in cases of intemperance, the stimulant to which the patient has been accustomed, with beef-tea or some other form of nourishment.

It is scarcely necessary to observe, that in all cases of nervous disease we must carefully watch the signs of functional disturbance or of structural change in any organ of the body, and that we must meet such symptoms by the appropriate remedies. And although, in most instances, a tonic plan of treatment is required, yet we must not hesitate to resort to measures of depletion if they are called for by the occurrence of such organic disease as appears to need this treatment.

The cases which are least favourable either for the opiate or for any other plan of treatment, are:—1st, cases of confirmed hypochondriasis or melancholy of very long duration, and especially when these have the character of religious despondency; 2ndly, cases in which extreme nervousness has resulted from great terror, or from

a sudden shock which has left a deep and durable impression upon the mind and nervous system; and, lastly, cases in which the symptoms are perpetuated by some constant source of anxiety and sorrow.

These classes of cases, although very unfavourable, and often little benefited by any plan of treatment whether medical or moral, are yet by no means hopeless nor always incurable. Their unfavourable and unmanageable character is, however, greatly confirmed when they are complicated with epilepsy; and this whether the epilepsy has been induced by a sudden shock of grief or terror, or whether it has supervened upon long-continued anxiety and nervousness.—*Medical Times and Gazette, Oct.* 22, 1853, *p.* 415.

24.—*On the Diagnosis of Cerebral Diseases.* By Dr. ROBERT HUNTER SEMPLE. —[The following is a summary of the chief points of diagnostic importance respecting diseases affecting the skull and the cerebral membranes:]

1. When a person suffers from constant and dull pain in the head, with or without convulsions, the pain being limited to a certain region, the external surface of the head being cool and the pulse regular, the digestive system not much or not at all disturbed, and the intellect unimpaired; if any thickening of the bony structure can be perceived, or if the patient has suffered from syphilis, it may be conjectured as probable that there is thickening of the skull, and that the symptoms are due to that cause In such a case, a moderate diet should be enjoined; leeches may be occasionally employed; the bowels should be kept gently open; but I think our chief reliance should be upon the internal administration of iodide of potassium in increasing doses, and continued for a long period.

2. When there is pain and heat of the head, *vomiting*, nausea, want of appetite, foul tongue, derangement of bowels, rapid and full pulse, squinting, delirium, thirst, and subsequent coma, and if the blood drawn be buffed and cupped, there can be little doubt that the case is one of meningeal inflammation. In such a case, there is no time to be lost; the warm bath must be used in the case of a child; cold must in all cases be applied to the head; leeches are always necessary; calomel is to be freely administered, and alterative aperients must be given at the same time. By the adoption of such measures many valuable lives may be saved.

3. When the head is cool, the pulse moderate, the tongue clean, the motions healthy, *then*, although there may be the most violent and long continued convulsions, squinting, drawing in of the thumbs towards the palms of the hands, and all other symptoms indicating deranged action of the nervous centres, there is nevertheless an absence of serious centric disease. We may here reasonably hope for a favourable termination by the use of ordinary hygienic means; such as lancing the gums, if the patient be undergoing the process of dentition; attending to the quality of the breast-milk in very young infants; correcting any acescences in the primæ viæ; change of air, and the judicious use of stimulants and tonics; and the adoption of all such other means as are calculated to improve the powers of the system in general.

It cannot be urged in too strong terms, that the mere existence of convulsions, however alarming they may appear, does not indicate, *alone*, a serious disease of the brain; these movements are merely the external manifestations of cerebral irritation, and are often caused by circumstances comparatively trivial. On the other hand, it must be remembered that, at all periods of life, the cerebral membranes, especially the pia mater, are apt to take an inflammatory action; and that, slight and web-like as this membrane is, and insignificant in appearance as are the lesions which it exhibits to the scalpel or to the microscope, yet upon its integrity or its unsoundness often depends the brightness, the perversion, or the obscurity of the intellect; and that an inflammatory disease of its texture is one of the most frequent causes of death. The most energetic treatment often fails to rescue the patient from the grave; but it is nevertheless of paramount importance to detect the malady during life, and, if possible, to arrest its progress.—*Association Med. Journal, Dec.* 2, 1853, *p.* 1055.

25.—ON THE ORIGIN AND CIRCULATION OF THE NERVOUS INFLUENCE.

By Dr. John M. Strachan.

[In spite of all the talent displayed in the investigation, it is undecided whether the nervous influence is identical with galvanic electricity or not. We should first decide whence this influence is derived. Some say it is generated in the brain and nervous masses, and distributed by the nerves; but the fact is, that there is scarcely any tissue less likely to originate electricity than the substance of which these nervous masses consists. Dr. Strachan suggests the idea that it is produced by the chemical action which is constantly going on in the change of arterial into venous blood. He observes:]

In every chemical action galvanic electricity is evolved; a large amount must therefore be produced in the animal system by the change of arterial into venous blood. The following is a condensed view of what is now generally admitted to be the nature of the change referred to. The blood after being exposed to the influence of the atmospheric air in the lungs, acquires a large amount of oxygen, so that the iron which it contains exists in the highest state of oxygenation as the peroxide. On reaching the capillaries, the peroxide of iron comes in contact with carbon, which attracts a portion of the oxygen; by this the peroxide is reduced to the state of protoxide of iron, and the carbon is converted into carbonic acid. The protoxide of iron and the carbonic acid, thus produced, immediately unite, forming the carbonate of iron.

It is quite clear that by these combinations galvanic electricity must be produced in great abundance; and as iron does not enter into the composition of any of the tissues or secretions of the body, it is probable that the production of electricity is the only purpose of this mineral existing in the blood in such quantity.

The chemical changes referred to are effected in the vessels situated between the termination of the arteries and the commencement of the veins. Now it is demonstrable that wherever arteries terminate and veins begin, there also are nerves distributed, and as these consist of afferent and efferent fibrils, which have been proved to be conductors of electricity, we have only to suppose that the galvanism set free by the chemical action is taken up by the afferent nerves, and passing through the nervous centres, is returned by the efferent nerves to the same point, and thus a continued electric circuit is established, every modification of which must promote or retard the chemical change, and so influence the circulation of the blood; and, on the other hand, changes in the circulation of the blood must have a powerful influence in modifying the electric current. There is thus a constant circulation of nervous fluid dependent upon the circulation of the blood; and just as the heart does not generate, but only distributes the blood, so the brain and the other nervous centres do not produce, but serve to accumulate, modify, and distribute the nervous influence.

This constant circulation of nervous fluid, in union with the circulation of the blood, is sufficient to give us an idea of organic life; and, perhaps, in some of the lower forms of animals this is all that exists. But as we rise in the scale of organization, the animal system becomes a much more complicated machine, having a variety of functions. It is therefore necessary to inquire how these may be performed.

The experiments of various inquirers have rendered it probable that there are distinct nervous centres, and that to each of these belongs its own separate function. It is probable that these functions are performed, not as has generally been explained, by electric shocks communicated *from* or transmitted *to* the central organs, but by sustained and constant circuits of electricity produced by the changes of the blood in the capillaries, and by the modification of these currents by external or internal agencies.

On the supposition that the different nervous centres have separate functions, and that they all receive their electricity from the chemical changes of the blood, there comes the question whether each central organ has a completely distinct set of nerves, and that thus there are distinct nervous extremities, as well as distinct centres, for each function; or whether there is only one afferent and one efferent fibril accompanying each capillary of the arteries and veins, which, receiving the electricity, con-

veys it to the nearest ganglion, from whence it is partly returned to the same point, thus maintaining the life of the part; but that a portion of the electricity is transmitted along other nerves to the more distant central organs, thus forming a longer circuit of motion or sensation.

It seems to be an universally received opinion that sensation results from impressions transmitted by the nerves to the central organ; that motion, on the other hand, arises from an influence sent from the central organ to the extremities of the nerves. thus conveying the idea that these centres are more sentient and more capable of originating motion than the other parts of the nervous system. This idea of impressions being conveyed to and from the brain is contrary to our consciousness, and this should be a powerful reason for doubting its truth. When I prick my finger, I am not conscious of any impression being transmitted to the brain; on the contrary, I perceive the impression in the finger, and only there. Why then, should we suppose that we are conscious only of impressions that are conveyed to the brain? It is true that any obstruction in the nerves connecting the external organs with the brain destroys sensation or motion. But this only shows that, for these functions to be performed, it is necessary that the electric circuit should be uninterrupted. The mind, however, is as likely to perceive any modification of that circuit at the point where it occurs, as at the distant central organ. And in the same way motion may arise from some change effected at the extremities of the nerves, and not from an influence transmitted from the brain.

Regarding those operations which are considered as mental, I would merely hazard a conjecture—namely, that the large development of the cerebrum should not be considered as a central organ, but as a development of peripheral nerves receiving electricity from the capillaries of the blood-vessels of the brain, and that these nerves have their centre in the commissures. This organ, which thus consists entirely of nerves and blood-vessels, may be, in accordance with general opinion, the seat of mental operations.

If it were established that there is a constant circulation of the nervous fluid, such as has been described, it would render our conceptions of the nervous system as clear as those we possess of the circulation of the blood. The principle which governs it is the same as that of the galvanic battery, or a more apt illustration would be the electric telegraph, with its electricity conveyed by the positive and returned by the negative wire; and to carry out the comparison, the different nervous centres may be considered as so many telegraphic stations. There is this difference, however, that, instead of successive sparks of electricity, we have a sustained and continuous current, and consequently a provision in the circulation of the blood for keeping up a supply of the chemical ingredients necessary to maintain the stream.

If it were established that the circulation of nervous fluid is kept up in the manner described, it would improve our knowledge of the circulation of the blood, by showing a purpose effected by it even more important than the nourishment of the tissues; and we should then clearly understand the use of the oxygenation of the blood by respiration to be, the restoration to that fluid of the power of imparting electricity.—*Lancet*, *Feb.* 25, 1854, *p.* 210.

26.—*Hysterical Chorea treated by the Syrup of the Iodide of Zinc.* Under the care of Dr. Barlow, at Guy's Hospital.—[In this case, the nervous derangement, depending on an uterine cause, took all the appearance of a case of cholera. The patient was 16 years old, of a peculiar masculine appearance. The catamenia had appeared about three months, and the chronic symptoms about five days before admission.]

On her admission, the patient presented a very excited condition; her arms were in constant motion, also the legs to a certain extent; the muscles of the face were likewise very much affected, contorting the face in a hideous manner. The tongue was remarkably enlarged, and the head very hot. Dr. Barlow thought that there was a mixture of hysteria and chorea in the case, and he prescribed decoction of aloes with tincture of valerian.

4th day. The patient does not appear better; a blister was ordered to be applied to the nape of the neck. She was desired to go on with the mixture.

9th day. Much the same; the bowels being confined, colocynth and calomel were ordered.

13th day. She is better to-day; her speech, which was very much affected, is now more natural. She takes the iodide of zinc (half drachm doses of the syrup) and calomel night and morning.

17th day. Improving; there is not so much inordinate muscular action; the tongue remains very much enlarged, and she complains of sore mouth, probably from the calomel. Go on with the syrup.

21st day. Has greatly improved under the use of the iodide of zinc; the girl is now able to feed herself; and on the 25th day she took her dinner at the general table with the other patients. She had then improved considerably, and walked very well. Dr. Barlow desired her to go on with the syrup of iodide of zinc in mint water, and to take half an ounce of decoction of aloes every morning.

This patient progressed very favourably for the next few weeks, with the exception of a feverish attack, during which the zinc was for a few days omitted, and she left the hospital June 28th, 1853, twelve weeks after admission, all the symptoms above related having completely disappeared.—*Lancet, Dec.* 31, 1853, *p.* 624.

27.—TETANIC SPASM TREATED BY CHLOROFORM.

By William Harding, Esq.

[Is there to be no antidote found for tetanus? The remedies—tobacco and opium—were the chief ones formerly employed. Tobacco is the most effective relaxer of muscular fibre perhaps, but it often occasions extreme and alarming prostration. Opium is sometimes, no doubt, of great apparent good; though the explanation of these good effects is not satisfactory. It is, perhaps, to the class of anæsthetics that we may look with the greatest hope of success. The effects of chloroform are here well described:]

Chloroform annihilates pain, it produces complete relaxation of the voluntary muscles. To effect the latter object, the stupor must sometimes be deep, as during its administration, at the commencement of the transition period, muscular excitement is occasionally developed; it is, however, very transient, and but the sure forerunner of a stupor that carries with it a perfect condition of muscular relaxation, in which the fibre becomes soft, flaccid, and helpless. Under this condition, difficult dislocations have been with facility reduced, the taxis has been more successfully employed in hernia, and the old-fashioned and objectionable helpmates to physical force,—viz., bleeding, tobacco, antimony, &c.—have been almost banished from practice.

Patients have been kept over and over again for hours under the influence of chloroform, without injury, and almost without any after discomfort. We are accustomed to look at intoxication occasioned by fermented liquors without the slightest anxiety, and to see it continued for days without alarm, though probably the effect of chloroform is less dangerous, and the after effects far less distressing. Having said thus much in favour of chloroform, I append a case of some interest in illustration.

The wife of a gentleman, residing some five miles from town, being by chance alone in the house, towards the dusk of the evening, was greatly terrified on entering the garden, by a supposed burglar, who had effected his entrance by scaling the wall, and was then at the bottom of the ground; a consciousness of the helplessness of her situation struck her with extra fear, she screamed, retreated into the house, felt faint and greatly agitated, and recovered but very little during the course of the evening; the five following days she continued in a very nervous and agitated state; there was a sense of tightness about the larynx; an uneasiness and stiffness about the jaws and throat; the tongue appeared awkward, and as though it were too large for the mouth; she could swallow fluids readily, but always with a sensation of some obstruction, that it required an extra effort to overcome; the sleep was agitated, and accompanied by perspiration in excess. On the afternoon of the sixth day she reposed on the sofa and slept, the mind re-enacted the scene of the first day—*magnifying events*—and she awoke under the impression of being strangled, and having

experienced during sleep that sensation. She was pale, agitated, profusely bathed in perspiration, and the jaws were immovably fixed. This state of trismus continued unrelieved for six weeks, during which time she was kept alive by beef-tea, wine, and other fluids poured through the teeth. At the commencement of the attack she was subjected to medical treatment, which was perseveringly continued for three weeks without success; she then passed into the hands of a mesmeric physician, and was subjected daily, for a fortnight, to its manipulations. She never, however, came under the mesmeric influence; being without faith and without fear she supposed herself to be a bad subject for it. At the end of the sixth week I visited the case, and at once proposed to endeavour to open the jaw by the influence or power of chloroform. This was agreed to, and on the following day, accompanied by my friend Dr. Taylor, I proceeded to the operation. The patient was readily brought under the influence of chloroform, and we were enabled, after some trouble, to get the mouth open a very little. At first the stiffness and rigidity were with some difficulty overcome, but as the influence of the chloroform continued, and the stupor became deeper, we were able by the assistance of a lever between the teeth to open the jaw to a sufficient extent. We now kept up a little action by opening and shutting the mouth, and finally placing an instrument prepared for the occasion between the teeth, allowed the patient quietly to return to consciousness. The operation, to our satisfaction, was quite successful; there remained not exactly a stiffness, but rather a complete want of power in the jaw. By generous diet, a moderate use of wine, quinine, and iron, &c., the health and strength of the patient have very much improved. It is now three weeks since the administration; the power of the jaw is not very great, but it has steadily and progressively returned.

I think this case a very fair example of the cure of chronic trismus—the mildest form of tetanic spasm—by the direct intervention of an antidote, of a remedy producing a diametrically opposite effect to that of the disease, and without wishing to be extravagantly hopeful, I will venture in conclusion, to say, that chloroform has the power of relaxing the voluntary muscles; that opium arrests the nervous influence that excites in the muscles its property of contraction, and that these are the indications to be fulfilled in the cure of tetanus, both in its acute and chronic form, whether confined to few or many muscles, and there is good and sufficient reason to believe that tetanus is a disease that will ultimately prove more amenable to treatment.—*Lancet, Dec.* 10, 1853, *p.* 546.

28.—USE OF CHLOROFORM INHALATIONS IN THE TREATMENT OF CERTAIN CLASSES OF SPASM.

By Dr. Russell Reynolds.

[These cases are related merely to show the therapeutical value of chloroform in certain groups of symptoms of a spasmodic character. The first case is one of *Asthma* in a young lady, aged 20, who had suffered from this disease for six or seven years. Many forms of treatment had been followed, but]

The attacks increased in severity, and were readily induced by changes in the weather, &c. The day before I saw her an attack commenced; throughout the night she had been in a state of orthopnœa, and epistaxis had occurred three times. The face was much swollen; the eyes scarcely visible; the dyspnœa and general distress were urgent; but there were no physical signs of disease to account for the symptoms.

Chloroform was administered in the following manner:—Twenty drops were placed upon the handkerchief, and inhaled from the distance of a few inches. As soon as the odour had disappeared the same quantity was re-applied, and the inhalation maintained for ten minutes consecutively, repeating the twenty drops when necessary. Care was taken during the whole process that no stupefaction should occur. If any sign of such result presented itself, the handkerchief was withdrawn for two or three seconds. The inhalations were repeated every four hours. Little or no relief followed the first; but it was perceptible after the second, and gradually increased with each repetition until the noon of the following day, when, as she was absolutely free from dyspnœa, the inhalations were discontinued. The swelling of the face disappeared entirely, and there was no return of epistaxis. On the

morning of the third day there was some slight return of dyspnœa, but it was immediately checked by one inhalation.

It is now nearly two years since the first use of chloroform in this case; and upon several occasions during that period an attack has been threatened, but has been at once averted by the inhalation of a few drops in the manner described above. The patient is apparently cured of her troublesome disease, or at least she has the means of relieving its most painful suffering.

Two cases, in persons of much more advanced age, have been treated in the same manner, and in each of them there has been similar success. In one the symptoms disappeared after three or four inhalations; and in the other the relief, though less rapid, was equally complete.

Esther K., aged 38, had for ten years suffered from painful rigidity of the right lower extremity. She states that it commenced in the thigh, and gradually extended to the leg, completely preventing all use of the limb. The right arm was occasionally affected in the same manner, and during the four or five weeks before my seeing the case the left side had become rigid in the same manner as the right. The patient described herself as suffering much pain in the limbs themselves, and still more in the lower dorsal and lumbar regions. She had been subjected to all the formidable array of counter-irritants, which are supposed to frighten such maladies away, and her spinal region bears the marks of numerous moxas, cuppings, &c. For several years she had been confined almost entirely to her bed, occasionally trying to move about with crutches, but never having been able to adopt the sitting posture, owing to the rigidity of the limbs. She lay perfectly flat upon the bed, and rigid as a board, from the occiput to the heels. Upon our attempting to raise the latter, she moved as if she was all in one piece. The greatest force which it was thought safe to exert was employed in vain to bend either the ankle, knee or thigh. The legs were adducted forcibly, so that the knees were pressed together, the right being rather in advance of and higher than the left. It was thought that the right leg, from its long continuance in this posture, must have become fixed, and that it was hopeless to make much attempt for its improvement. However, partly for the sake of its examination, and partly for the purpose of diagnosis, (as there was some supposition of exaggeration on her part,) it appeared to me desirable to remove consciousness and volition, and to accomplish this I suggested the use of chloroform. It was accordingly inhaled, and we were somewhat surprised to find that both limbs became perfectly flaccid, and could be moved with pleasure into any position that we chose. When the limbs were in this perfectly relaxed condition, reflex actions were readily obtained by the application of a heated plate to the soles of the feet. As consciousness returned, the spasm recommenced, and it did so before it could be asserted that distinct volition was exercised. The patient made inarticulate sounds upon being pinched; but could not, or at all events did not, make any attempt to answer questions, or to change the position of the limb. A second quantity of chloroform was then given, sufficient to relax the muscles, and the legs were placed in such a position that extension could not take place. Chloroform has not been inhaled again, as from some cause the muscular rigidity has not returned to anything like the same extent, and the patient now moves about with the aid of a crutch. There is some loss of power in both legs, and loss of sensation in the right, but there is no spasm. To the present state of the patient and its diagnosis it is not my intention to refer. The only point to which I wish to direct attention is the effect of chloroform upon tonic spasm of such prolonged duration.

My friend Mr. Squire had under his care a most obstinate case of "*Hysterical knee.*" The leg had been kept at an acute angle for five years, and had resisted all attempts at extension. It was thought, from the firmness with which it retained this position, that at least ligamentous anchylosis must have taken place. The inhalation of chloroform proved, however, that such was not the case; for when consciousness and volition were in obeyance, the joint became perfectly flaccid, and the leg could be extended completely.

From these and some other cases, I am disposed to think that chloroform may be of much service in the examination, diagnosis, and relief of certain forms of spasm. It is a great assistance, sometimes, to remove volition, sensation, idea, and emotion from the field of investigation. Some spasms appear to be placed in curious relation with one or all of these centres of motor impulse, and to be, to a

certain extent, dependent upon them. It is, perhaps, more probable that volition, itself is in a morbid state, than that any intentional deception is practised. Ideas, as well as muscular movements, may be grouped abnormally. Sensations and emotions, in their exaggerated form, may be as real (so far as the patient, as a moral being is concerned) as in any other case; for the absolute force of their external cause is but one of many concurring influences for the regulation of their intensity. There is a tendency to the grouping of muscular contractions; and by their frequent associations, habits (of physiologic and pathologic character) are formed. It may be that, in the breaking of these habits, chloroform will prove of service.

The inhalation of an anæsthetic agent can do little more than relieve the symptoms, when there is, under-lying them, some organic disease; but in other cases, where the concatenation of such phenomena constitutes the whole disease (or the whole which we are able yet to recognise), it is possible that much more may be accomplished. For whilst in the former class we can only prevent some of the effects of morbid processes, which are themselves beyond our reach, in the latter class we may remove the whole. Pathology has not yet advanced to the perfect discrimination of these two classes of disease; but there are grounds for hope that by the discovery and careful application of some experimental process we may be able to place the phenomena of nervous disorders among the class of objective symptoms. Were this accomplished, we should have the same kind, and perhaps eventually the same degree of certainty, in their diagnosis, that we have now with regard to diseases of the chest.—*Lancet, Oct.* 29, 1853, *p.* 411.

29.—ON TETANUS FOLLOWING LESIONS OF THE UTERUS, ABORTION, AND PARTURITION.

By Prof. J. Y. Simpson, Edinburgh.

Dr. Robert Reid, in his work 'On the Nature and Treatment of Tetanus, &c.,' states that "injuries or derangements of *internal organs* do not appear to have much tendency to produce this affection. Indeed (he adds), I have not been able as yet to find any case recorded of true tetanus which arose from *internal injuries*, whether in the alimentary canal or elsewhere."

[From a series of twenty-four cases, Dr. Simpson proves that traumatic tetanus does occasionally supervene as a secondary obstetrical disease. He then enters upon the]

Nature of Puerperal Tetanus.—It will be granted, I believe, by all pathologists that the existence of an injury or a wound upon the external parts of the body, is by far the most common cause of tetanus. After abortion and parturition we have the existence, upon the interior of the uterus, of a similar state of lesion. All authorities seem now generally agreed as to the facts (1) that the human decidua is, as was maintained in the last century by Krummacher, the thickened and hypertrophied mucous membrane of the uterus, (2) that the epithelial or superficial layer of it separates from its basement or outer layer in abortion and after delivery—and (3) that this separation or solution of continuity of tissue, as well as the rupture of the organic attachments of the placenta from the uterus, leaves the interior of this organ so far in the condition of an external wound, or with a new or raw surface for the time being exposed. Obstetrical tetanus has, in this respect, an exciting cause essentially similar to surgical tetanus. And perhaps the great reason why this state of lesion of the interior of the uterus does not more frequently give rise to tetanus is simply this, that the uterus is itself principally, or indeed almost entirely, supplied by nerves from the sympathetic system, while apparently, as stated by Mr. Curling and other pathologists, tetanus is an affection far more easily excited by lesions of parts supplied by nerves from the cerebro-spinal system, than by lesions of parts supplied by nerves from the sympathetic system.

Tetanus is known to follow wounds very various in their degree and severity. "Whether (says Professor Wood) the wound is trifling or severe seems to be of little consequence," as far as regards the supervention of secondary tetanus. By what a thological mechanism a wound or lesion of a part can, under any circumstances, ad on to an attack of tetanic disease, is an inquiry regarding which we as yet pos-

sess little information; and in this respect, the production of obstetrical tetanus is not more obscure than the production of surgical tetanus.

The disease, when developed, essentially consists of an exalted or superexcited state of the reflex spinal system, or of some segment or portion of that system. What circumstances in midwifery or surgery might possibly, whether single or in combination, produce this state, and so produce traumatic tetanus? In relation to this question I will venture to make one or two hypothetical remarks.

1. We have in obstetric pathology evidence almost amounting to certainty that the analogous superexcitable state of the cerebro-spinal system of nerves which gives rise to eclampsia or puerperal convulsions is generally produced by the existence of a morbid poison in the blood. And it seems not impossible that the generation of a special blood poison, at the site of the wound or elsewhere, may sometimes in the same way give rise to obstetrical and surgical tetanus. We know, indeed, that the introduction into the blood of particular vegetable poisons, is capable of exciting an artificial disease quite analogous to tetanus. Brucine and strychnine have both of them, as is well known, this effect. Abundant experiments upon the lower animals, and cases of poisoning in the human body have amply proved this. Tetanus is a frequent disease from wounds, &c., in the horse and lower animals. Would it not, in relation to the possible humoral origin of the disease, be worthy of trial whether the blood of an animal dying of tetanus is ever capable by transfusion of infecting another animal with the same malady? The experiment is said to have succeeded with a disease having many analogies with tetanus, viz., hydrophobia. But,

2. We know further, with regard to the tetanizing effects of strychnine and brucine, that these agents do not necessarily require to circulate in the blood in order to produce their special effects. In the lower animals, when strychnine or brucine is applied directly in the spinal cord, tetanic effects instantly follow; and in all probability, when they are introduced into the blood, they produce their tetanizing consequences, by being carried in the current of the circulation to the cord—thus toxicologically influencing it, as if they were primarily applied to it. Centric irritation, or centric morbid condition of the cord (and, it may be, of the cerebro-spinal system), may lead on, according to these experiments, to tetanic disease, independently of any morbid state of the blood. And, if the observations of Sims, Harrison, and others, are correct as to the occasional mechanical origin of *Trismus Nascentium* from pressure and displacement of the occiput upon the medulla oblongata, we have, in this obstetrical instance, tetanus resulting,—as it certainly sometimes does under other circumstances,—from direct injuries, or affections of the nervous centres.

3. The appropriate and specific affection of the spinal cord, or cerebro-spinal system, constituting traumatic tetanus, would appear to be sometimes, if not always, a condition excited by some influence propagated upwards along the nerves, from the seat of the injury or wound to the central portions of the nervous system. In proof of this, we have the fact that occasionally (as in cases published by Hicks, Murray, Larrey, &c.,) but not often, the artificial division of the nervous communication between the seat of the wound and the nervous centres has arrested the disease, when performed in a very early stage of the attack. What the nature of the transmitted influence may be, we have no reason at present of judging. But we have analogies for the transmission itself in some of the phenomena of electrical induction and propagation. And let me further add, that the symptoms of tetanus assimilate themselves very greatly to a rapid succession of electrical or galvanic currents transmitted peripherally from a nervous trunk or centre to the sets of muscles affected.

At the present time various physiologists are busy with recondite inquiries into the laws pertaining to the electro-motive powers of the nervous and muscular systems of the body. When our knowledge of these laws is more advanced, physicians will, perhaps, be able to deduce from them a truer and juster pathology of tetanus and other convulsive diseases.

Treatment of Puerperal Tetanus.—According to Mr. Curling, tetanus is not only less frequent in women than in men, but it is also "*less fatal* in the female than in the male sex."

Out, however, of the preceding list of twenty-four cases of obstetrical tetanus,

only three recovered, and these under opposite modes of management. There are two other cases on record of the successful termination of puerperal tetanus. The two cases I allude to have been reported by Dr. Symonds and Dr. Currie. The true tetanic character of both cases may perhaps admit of some doubt.

In obstetrical tetanus, no kind of local treatment to the seat of the original uterine lesion could be well applied, or would probably be of any avail, if applied. And, as to *constitutional* means, perhaps the most important are,—

1st. The greatest possible quietude and isolation of the patient from all irritation, corporeal or mental, during the course, and for some time even after the resolution of the disease.

2nd. The special avoidance of painful and generally impracticable attempts at opening the mouth in order to swallow; but sustaining the strength of the patient, and allaying thirst by enemata, or by fluids applied to the general surface of the body.

3rd. If there is any well-grounded hope of irritating matters lodged in the bowels, acting as an exciting or aggravating cause, to sweep out the intestinal canal at the commencement of the disease with an appropriate enema.

4th. To relax the tonic spasms of the affected muscles, and diminish the exalted reflex excitability of the spinal system by sedatives, or antispasmodics; with the prospect of either directly subduing this morbid reflex excitability; or of warding off the immediate dangers of the disease, and allowing the case to pass on, from an acute and dangerous attack, to a sub-acute, and far more hopeful and tractable form of the malady.

Various sedatives and antispasmodics have been recommended to fulfil this last most vital and important indication in the treatment of tetanus—as belladonna, stramonium, hemlock, henbane, musk, camphor, Indian hemp, hydrocyanic acid, valerian, &c. Perhaps the two drugs of this class that have hitherto been most used, and relied upon, are opium by the mouth, and tobacco by enema. But certainly we have no decided evidence of the beneficial effects of opium, even in the most heroic doses; and it seems doubtful even if this and other such medicines are readily or at all absorbed from the stomach and upper part of the intestinal canal in cases of acute tetanus. Tobacco in the form of enema has doubtlessly often acted most favourably in arresting the spasms; but it is a drug the action of which is not easily or safely kept up with that degree of constancy which is required in acute tetanus. Latterly the antispasmodic action of sulphuric ether and chloroform has been repeatedly employed to allay that exalted state of the reflex nervous system, and to relax that resulting tonic contraction of the maxillary and other muscles, which constitute the essence of tetanus. Medical men may yet discover therapeutic agents (to be introduced into the body by inhalations or otherwise,) the action of which will be as directly anti-tetanic in their effects, as strychnine is directly tetanic in its properties; and such agents—if they were otherwise innocuous—would form the proper remedies for tetanus. Here, as elsewhere, in future medicine physicians will probably seek for therapeutic remedies in the same way, and upon the same principles, as toxicologists search for antidotes to poisons. Chloroform in sufficient doses acts as a direct sedative upon the reflex nervous system, and upon exalted muscular contractility. In consequence of this action, it affords us one of our surest and most manageable means of allaying common convulsive attacks: and it has now also, according to the reports in periodical medical literature, been repeatedly successful in the treatment of traumatic tetanus, whilst it has apparently also repeatedly failed in subduing the more acute forms of the disease. Perhaps some of the failures have arisen from the patient not being kept sufficiently deeply and continuously under the action of the drug. If used in tetanus its action will require to be sustained for many hours, or oftener perhaps for many days. And there is abundant proof of the safety with which its continuous action may be kept up under proper care and watching. For instance, a few months ago I saw, with Dr. Combe, a case of convulsions of the most severe and apparently hopeless kind in an infant of six weeks. The disease at once yielded, and ultimately altogether disappeared under the action of chloroform, which required to be used almost continuously for thirteen days; as much as 100 ounces of the drug being used during the period. After all tendency to convulsions at last ceased, the little patient rapidly grew, and is at the present moment a strong, healthy child. In a case of the successful treatment

of traumatic tetanus by Dr. Dusch, about sixty ounces of chloroform were employed. Let me close these remarks with a case of puerperal tetanus treated with chloroform.

[The following case is related by Professor Lawrie, of Glasgow, in a letter to Dr. Simpson.]

"Mrs. B., a fine young woman, æt. twenty-four, in the third month of her third pregnancy, miscarried on the 4th of this month (Jan. 1854). She lost a considerable quantity of blood, and required plugging, cold, and pressure, but was so well on Sunday the 8th that I ceased my attendance. On Thursday the 12th she complained of stiffness about the neck and lower jaw, but not suspecting the nature of her illness, she did not send for me till late on Saturday the 14th. I found trismus well marked—the spasm not extending beyond the neck—and the pulse nearly natural. Every attempt to swallow gave great pain, and produced a spasm in the muscles of the neck and larynx, which threatened instant suffocation. I forbad all attempts at swallowing, ordered nutritive enemata with 50 or 100 drops of laudanum every six hours, and pectra to the neck, with aconite and chloroform. There was little change till the night of Monday the 16th, when the pulse had risen to 120, and the spasms had greatly increased, but had hardly extended beyond the neck; deglutition was impossible. I immediately exhibited chloroform, which acted admirably, and gave instant relief. I taught her husband and mother how to use it, and she has since been more or less constantly, and nearly continuously, under its influence. Thursday, 19th, the pulse was 96, and she swallowed with comparative ease. To-day, Friday, 20th, she is not quite so well; the pulse is 108, the abdominal muscles rather tense, and the rectum will not retain the enemata. In this last occurrence I was of course prepared; and since the 15th, she has been carefully rubbed with oil, butter, and cream. She still swallows tolerably well. My *prognosis* in this case was from the first serious, for although the pulse was natural, and the spasms had not extended beyond the neck, deglutition was nearly impossible, and suffocation was often imminent. One symptom I have forgotten, which is often one of the most distressing—a constant cough from accumulated mucus, which cannot be raised or got rid of. In two days it has disappeared. I now anticipate recovery. The *treatment* has been negative, with the exception of the chloroform, which has been most useful. I attribute the improvement on the 17th and 18th entirely to it; and if Mrs. B. recovers, she will owe her life to your invaluable discovery."

Even when not curative of tetanus, the use of chloroform has proved of no small service in relieving the sufferings and agonies of the patient. Thus, in a fatal case of puerperal tetanus, the medical gentleman who drew up the case observes, "We had the just comfort of finding the paroxysms materially alleviated by chloroform, which was used during the last sixteen hours of the patient s life. 'Chloroform! Chloroform!' was the poor sufferer's anxious exclamation whenever she felt the spasms impending, and comparative tranquillity speedily followed its application each time." Our practical power over the most rapid and fatal forms of tetanus perhaps amounts yet to little more than a "meditatio mortis." But even to alleviate the sufferings attendant upon such a dreadful disease (should we effect no more), and to produce a state of euthanasia, is surely an object worthy of the best directed efforts of the medical art.—*Monthly Journal of Medical Science, Feb.* 1854, *p.* 97.

30.—LOSS OF SENSATION, AND OCCASIONALLY OF MOTION IN THE LOWER EXTREMITIES.—HYSTERIA.

Under Dr. Rowland, at Charing Cross Hospital.

[Sarah Poulton, aged 25, thin and delicate; married, and has one child. Is exposed to much cold while engaged in her household work, and attributes this as the cause why the menses have not appeared during the last two months.]

For the last two or three months she has had severe pain of back and loins, and occasionally of the legs. She has also been troubled with pricking sensations in the calves and soles of the feet. Yesterday, when employed in sweeping her room, her legs seemed to give way under her; she fell to the ground, and has not since been *able to stand* alone. She has lately had several hysterical attacks.

The lower extremities are rather colder than natural, and there is an entire absence of ordinary sensation in them, but when the limbs are forcibly flexed severe pain is excited. She has also lost the power of moving them; there is pain, increased on slight pressure, in the lower dorsal region of the spine and over the sacrum; the appetite is bad; the bowels constipated; the sleep disturbed; the urine is loaded with lithates.

A blister was applied to the spine, and, at first, a mixture containing the iodide of potassium and small doses of the bichloride of mercury was ordered, and afterwards the iodide of iron, with, however, scarcely any benefit. Subsequently she had two or three violent hysterical seizures in the ward, and there was then ordered a draught containing tincture of sesquichloride of iron, ℥ xv.; tincture of cantharides, ℥ iv. and ℥ xx. of the tincture of aloes, to be taken three times a day.

She continued to take this medicine until November 16, and, at the same time, galvanism was applied to the palsied limbs. The improvement was manifest even from day to day. On the 26th of October sensation was nearly complete, and she was able to walk across the wards, but not without considerable assistance.

Nov. 16. She can now walk with very little support; the sensation of limbs is but very slightly impaired; she has not menstruated; the legs, when flexed, are no longer painful.

To take ℥ iij. of Fowler's arsenical solution in water, with half a drachm of the compound tincture of cardamoms three times daily.

23rd. Walks now without support; sensation perfect. For the last few days she has complained of pain in the lower part of the back and abdomen; the catamenia have not re-appeared. Rep.

On the 28th, sensation being natural, and motion nearly regained, she was discharged from the hospital, and Dr. Rowland took occasion to make the following remarks:—

Looking at this case from one point of view, the suspicion of structural disease within the vertebral column might be entertained. Thus, there were prickings and pains of the lower extremities, which suddenly terminated in loss of sensation and motion. But a closer acquaintance with the symptoms tended to remove such apprehension, for, besides the hysterical paroxysms that occurred both previous and subsequent to admission, a more minute analysis of the local symptoms gave results not easily reconcilable with the existence of organic lesion. The limbs were numb rather than decidedly anæsthetic. When force was used for the purpose of flexing the joints, the patient cried out with the pain, and the legs were sometimes painful, even when at rest. The pain of back varied from day to day, sometimes being very severe, at others almost null, while slightly pinching the integument covering the spine was at least equally productive of suffering as firm pressure. Moreover, the countenance was often flushed and excited, and there was a good deal of nervous agitation in her manner. These, and similar symptoms, interspersed with those more decidedly hysterical, soon removed all doubt as to the nature of the malady, an opinion which the subsequent history of the case has confirmed.

In this patient, a type of hysteria is presented which bears a near resemblance to structural disease. Instead of the instability or proteiform character usually belonging to the complaint, there were here symptoms pertinaciously continuing for a long period, and at length slowly and gradually subsiding under treatment. In the zeal for pathological discovery, affections merely functional, or which at least exist independently of any discoverable change in the texture of organs, have scarcely been allowed their due importance. In practice, however, it is highly essential to recognise them. Several examples of this kind have lately presented themselves at the hospital exhibiting various forms, but each case preserving its individuality for a lengthened period.

It is true that some cases of hysterical palsy are little more than mere fantasy, and are kept up in a great measure by the patient lending herself to the task, and refusing to exercise her command over the refractory muscles. A rough shock or a strong moral impression may at once remove the disorder; but it is very doubtful whether any such means would be productive of benefit in cases like the present. In some respects this form of palsy resembles that of the portio dura, caused by exposure of the face to a stream of cold air, which, although unassociated with cerebral disease, is often tedious in its cure. In like manner the hysterical paraplegia

may commence with irritation of the uterine nerves. It is always accompanied by some kind of derangement in the functions of the womb, and is totally unallied with organic change, or any action conducting to such change in the brain or spinal marrow.

The pain of back of which this woman complained was of that kind commonly known as spinal irritation. It was by no means a constant symptom; but neither its accession nor its subsidence was marked by a corresponding change of the principal affection.

This spinal irritation appears to me to have had too great influence assigned to it in the causation of disease. It is one of those pathological conditions that dwindle into insignificance under steady observation. That it is commonly found in conjunction with hysterical affections is indeed undeniable, and so far it is valuable in diagnosis. Occasionally, too, applications to the tender points of the spine may seem to mitigate the other symptoms, but far more frequently this practice is followed by no good result. The spinal pain may be observed to come and go repeatedly in some cases, or to change its seat without occasioning the slightest mitigation of the hysterical troubles.

In the early part of the treatment of this patient, iodine and mercury were given, but no benefit followed. The aloes and iron produced immediately an evident improvement. Sensation was restored to the affected limbs long before their power of movement was regained. She has latterly taken the arsenical solution, which is often found an excellent remedy in these complaints, and even in chronic palsy of cerebral origin when a tonic is required. Galvanism was employed in this case severingly by Mr. Muirhead, and it has no doubt materially aided in the recovery.—*Med. Times and Gazette, Dec.* 10, 1853, *p.* 106.

31.—CASES OF EXHAUSTION OF NERVOUS POWER IN THE SOLAR PLEXUS.

By Prof. Osborne, Dublin.

[Believing the depressing feelings belonging to hypochondriasis to depend on a depraved sensibility of the stomach or colon, or both, Dr. Osborne determined to try the effects of chloroform taken internally].

The first patient who presented the conditions requisite for this experiment was a married woman, and a mother, aged 33, of a querulous disposition, as was well marked in her countenance, and who had been on a former occasion under his care and that of another practitioner, complaining of a variety of pains in the abdominal region; and she, although relieved, yet persevered in the belief that she still had some internal disease. She now appeared to labour under spinal neuralgia. After this had yielded to the application of nitrate of silver to the spine, and some other remedies, she still continued to feel an indescribable sensation of depression, and of internal annoyance, no longer to be referred to the spinal nerves; no cause for it could be detected. The appetite was good, and the action of the bowels regular. In two days, after taking ten drops of chloroform thrice daily, she *began, for the first time, to acknowledge that she was better*, and in a few days afterwards was free from complaint. The second case was that of a caretaker in the linen-hall, aged 29. He complained of the deepest dejection of spirits, and of an uncontrollable aversion to make any exertion. His countenance expressed sadness and moroseness. All the functions were in a healthy state, except that the heart's action became tumultuous when excited either by emotion or exercise; but no organic disease could be detected. He stated that he had not been addicted to excesses of any kind, and that there was no cause for his lowness of spirits. He got valerianate of zinc, and also pills to regulate his bowels; but although the heart's action became steadier, yet the depression and inward sensation continued the same. After taking twenty drops of chloroform thrice daily for two days, *he began to confess*, what he never did before, *that he was better*. His sleep being still unsatisfactory and disturbed by disagreeable dreams, he was ordered to take forty drops at bed-time. He now stated that he slept with a pleasing dream of seeing his brother, who had gone to America. During the two following nights he took the same dose; and, although *his sleep* was interrupted by the disturbance attendant on a man in a dying state in

the same ward, yet when he did sleep his dreams were pleasant, being usually that he was enjoying the company of the most agreeable of his friends. He was dismissed with a marked improvement in his countenance, and *acknowledging that he was better.*

The third case was that of a farmer from the county of Wicklow, twenty-eight years of age. In him the poet's exclamation *Beati agricolæ!* appeared to be completely reversed. The angles of his mouth were drawn down, his brow generally contracted, and he appeared sometimes as if contemplating suicide; yet he stated that he was in comfortable circumstances, married, and with a family. He complained of an inward sinking and sense of depression, so constant and overpowering, that for some months he could not command himself to make any exertion, and had become unable any longer to attend to his business. His bowels were usually torpid, but although he had repeatedly taken purgative medicines with effect, yet he had obtained no further benefit. A careful examination having been made without detecting any disease, he was ordered to take ten drops of chloroform thrice daily, and two assafœtida pills every alternate night. At the end of about four days of gradual improvement his countenance had become placid. *He confessed that he felt much better;* and in a few days afterwards, feeling a strong desire, and also a capability, of resuming his ordinary vocations, he went home.

These cases are selected as being nearly free from complication. It must, however, be recollected, that there are several other uses to which chloroform may be applied in affections of the stomach and intestinal tube, but this appears to be one of the greatest value, inasmuch as no other medicine can be named which in this respect seems to come into competition with it. How far the effect is permanent and capable of completely removing the sensation of hypochondriasis, or in what degree it may require to be resumed or repeated, Dr. Osborne as yet has not been able to determine.

The menstruum which Dr. Osborne used in the above and other cases was the decoction of Irish moss (carrageen). With this chloroform forms a uniform mixture, and in the proportion of ten drops to the ounce they remain for an indefinite time without separation taking place. The taste of the mixture is sweet like that of a heavy syrup, to relieve which it may be well to add a few drops of some aromatic or bitter tincture.

Another mode of avoiding the pungency of chloroform is by giving it in combination with tinctures, as it is soluble in alcohol, and remains dissolved even in proof spirit. The following is a specimen of this kind of formula, and is peculiarly grateful to the taste, and susceptible of various additions and alterations, according to the requirements of individual cases:—Chloroform, and tincture of ginger, of each half an ounce; aromatic spirit of ammonia, two drachms. Mix. Twenty-five drops to be taken thrice daily in a wine-glassful of milk.—*Dublin Quarterly Journal, Nov.* 1853, *p.* 463.

32.—SCIATICA, AND ITS TREATMENT WITH CROTON OIL.

By Henry Hancock Esq

[Mr. Hancock is of opinion that mechanical irritation of the nerve within the pelvis is the most frequent cause of sciatica. This may be from loaded colon or cæcum, or from tumours formed within that cavity.

Case 1. The wife of a clergyman consulted Mr. H. six years ago, for sciatica which had existed nearly two years. Internal remedies of many kinds, and all varieties of counter-irritation had been employed without any success.]

Upon carefully examining the large intestines, the cæcum and ascending colon appeared distended, and yielded a dull sound on percussion. Under these circumstances I concluded this was a case depending upon local irritation within the pelvis, and not upon rheumatism or inflammation of the nerve, and therefore ordered—croton oil, one minim; blue pill, extract of hyosciamus, each four grains; compound extract of colocynth, eight grains; to be divided into four pills, two to be taken that night: that she should gradually diminish the quantity of morphia until she left it off entirely, and abstain from solid food until I again saw her, which I did on the day but one after. I then found her much relieved, but extremely angry at the violence

of the medicine, which had acted very efficiently, dislodging a large quantity of hard, lumpy, dark-coloured feculent matter. The pain, though diminished, was still very great, but she described it as having assumed the sensation of a severe bruise rather than the intense sharp burning pain which she had hitherto experienced. Her bowels had not acted for twenty-four hours, and as up to the time of their ceasing to act the evacuations were not simply fluid, but continued to present scybalous matter, I prevailed upon her to repeat the pills at night, assuring her that when they ceased to meet with obstruction, they would act less powerfully.

After another interval of a day, I again saw her. She was then (and she expressed herself) much better. The acute pain had entirely left her, and the sensation of bruising was so much diminished that she described it as more like numbness than anything else. She assured me she had not been so well for some months. Her tongue was cleaner, her abdomen softer, she could now walk across the room without pain, and had only taken her morphia once on the preceding day; her pulse was weak and her skin cold and clammy. I ordered three grains of the sulphate of quinine every four hours, and the morphia discontinued entirely. Under this medicine she rapidly recovered; the sensation of numbness disappeared, and she returned home cured after being in London for a fortnight.

Case 2. Mrs. G., residing at Brook-green, consulted me for lumbago and sciatica of the right leg. She had suffered for three months, and had been told it depended upon rheumatism, and was treated accordingly by cupping, blisters, warm bath, colchicum, &c., but without experiencing any relief. I prescribed the croton-oil pills as in the preceding case. She took them twice and was cured.

Case 3.—The Rev. E. C. consulted me for sciatica of the right leg, of two months' duration, but very severe. He is a very talented, strong-minded man, and fond of athletic exercises; but he describes the pain as so intensely severe as to be almost beyond the power of endurance, that it entirely deprived him of rest, the only easy position being that of sitting; that when he endeavoured to stand upright or to straighten his leg, he could scarcely refrain from calling out. He was first attacked with lumbago after riding in an open gig; but being engaged to shoot the following morning, he applied a large mustard poultice over the loins, which relieved him so much that he thought himself sufficiently recovered to keep his appointment; but after walking for about an hour, his sufferings became so great, he was obliged to return home, and go to bed. He placed himself under the care of a gentleman, who gave him steel and quinine, and citrate of iron with quinine, and also applied chloroform blisters from the hip to the external malleolus by means of strips of lint dipped in the chloroform, and retained by bandage over the course of the nerve. This produced a broad strip of blistered surface down the entire length of his leg, but increased rather than diminished his sufferings. He sought other advice, but with so little benefit, that he wound up his narration by saying—"Mr. Hancock, it is a most remarkable thing, but you gentlemen do not appear to me to understand anything at all about the complaint." His tongue did not indicate anything particular, neither did his pulse. He was fresh-coloured, stout, and full-bellied. I told him that, however well the treatment pursued might be adapted to some forms of sciatica, I did not consider they were suited to that under which he was labouring; that I believed nineteen out of every twenty cases of sciatica depended upon mechanical irritation of the nerve within the pelvis by the pressure of the loaded intestine upon it before it left that cavity; and that I had very little doubt that what he required was such medicines as would thoroughly empty out the large intestines, and that he should leave off the quinine and steel for the present. He by no means liked the opinion I expressed, assuring me that his bowels were regularly acted upon once a day, adding they were like a child's, they were so easily acted upon. However, I again explained my views, and he agreed to follow my instructions. I therefore ordered him the croton-oil pills, as in the other cases. In two or three days he wrote up from his residence, about twenty miles in the country, that he had taken the medicine, but without deriving any benefit, and without its acting as he supposed I expected it would. I therefore doubted the drugs, and consequently had the same prescription prepared in London, and forwarded to him. These acted most powerfully, and with an entire cessation from pain on the following day. The pain, however, returned in a day or two, when he repeated the pills, which acted briskly, though not so much so as on the first occasion; but he wrote me up word that the pain in the loins and around the hip was almost gone,

but that he still suffered from a feeling of bruising in the calf of his leg, and was extremely weak. I ordered him sulphate of quinine, three grains, three times a day. This, however, did not afford him the relief I had observed in other cases. His bowels became confined, and the pain increased, as did the sensation of weakness, in consequence of which he begged I would not order the pills to be repeated. I ordered compound guaiacum mixture, a wineglassful thrice daily. This acted most satisfactorily; the bowels became completely evacuated, though for several days he continued to pass scybalæ until they ultimately disappeared, and he became entirely free from pain, and could stand up and extend the limb without the slightest inconvenience, complaining only of general debility. I now ordered him sulphate of quinine in one-grain doses, and he rapidly got well three weeks from the time I first saw him.

Case 4.—Captain C. consulted me on December 30th, 1853, for lumbago and sciatica of twelve months' duration. Complains of pain in lower part of the back, extending towards the right hip and down the leg, and increased by fatigue. He attributes the attack to a severe fall on the flat of his back, after which he experienced symptoms simulating ague, rigors, sweats, debility, total loss of appetite, nasty taste in his mouth, and so much nausea that he could not touch anything. He says that when these symptoms were most severe, the perspiration smelt very sour and sickly. Upon questioning him, I found that he had suffered with stiffness, like lumbago, after stooping, for six months before the accident. His bowels act regularly, but his motions are generally relaxed, unless he is baulked, when they immediately become confined; sleeps badly; appetite moderately good, though very capricious; thinks he can eat largely, but is soon satisfied, and feels full after eating; easily tired, but refreshed after an hour's rest; had yellow fever slightly six months ago; urine natural; pain relieved by pressure in course of nerve; is most easy whilst lying on either side with his knees raised; the pain much increased when he lies on his back, and endeavours to extend his legs. He has been treated for rheumatism and ague, having taken colchicum and quinine in large doses, and been blistered and rubbed with various applications. Ordered croton oil, with mercurial pill, extract of hyosciamus, and compound extract of colchicum.

January 13th. Better. Medicine acted very powerfully; says he felt better directly afterwards; has been much occupied, and had a great deal of exertion, but suffered so little pain that it scarcely attracted his notice. The medicine dislodged a large quantity of scybalæ. Ordered compound aloes pill, five grains, one every other night.

27th. I again saw this gentleman, he told me he had been entirely free from pain for several days.

Case 5.—C. A., Esq., consulted me in Nov., 1853, for sciatica of the right leg. Had been ill four months, and treated by colchicum, blisters, &c., with but slight relief. Was bent nearly double with pain, extending down the course of the nerve, and in the lumbar region. The pain is most severe at the knee, foot, and calf of the leg; gets no sleep, and feels very weak, though his appetite is good. To take croton-oil pills, two on alternate nights.

Came again in four days. Says that the first day after he took the pills he was much better, but thinking to cure himself more rapidly, he had, contrary to advice, repeated them on the following night, when they acted so violently that he was completely prostrated; his pulse was irritable, and the pain not so well as on the day before; his skin was covered with cold, clammy perspiration. Ordered disulphate of iron, three grains, three times a day.—*Lancet, March* 4, 1854, *p.* 241.

DISEASES OF THE ORGANS OF RESPIRATION.

33.—INFLUENCE OF CONTRACTILITY OF THE LUNGS AND OF RESPIRATION UPON THE CIRCULATION.

By Dr. Skoda. (Translated by Dr. W. O. Markham.)

It has been shown that the columns of blood in the veins of the neck remain unchanged during ordinary inspiration and expiration; and hence it might be judged, that the natural respiratory movements exercise no influence upon the blood in the

veins. It is impossible, however, to deny, that unless, by some special contrivances preventing, blood as well as air must be drawn into the thorax during inspiration, and expelled during expiration, so that the question here presents itself, What is that contrivance by which the influence of the respiratory movements on the circulation of the blood in the veins is prevented?

The lungs normally possess a contractile power, which causes the arching upwards of the diaphragm, and the depression of the intercostal spaces, and which persists, even during expiration. Experiments on animals show us, that when the thorax is opened the lung frequently contracts into less than half the space it occupied at the end of expiration, when the thorax was uninjured.

The persistence of the contractility of the human lungs, even up to the completion of the expiratory act, is proved by the fact, that in healthy persons the percussion sound is not more tympanitic during expiration than during inspiration; whilst, on the other hand, the entire loss of contractility of the lungs in disease is shown by the presence of the tympanitic percussion sound during both inspiration and expiration, and the diminution merely of their contractility by the presence of the tympanitic sound only during expiration. The healthy lung must, consequently, exercise, both during inspiration and expiration, an influence upon the walls of the thorax, and upon all its contents. This influence must certainly be greater during inspiration than during expiration, but the difference can hardly be thought sufficient to produce a distinct rising and falling of the cervical veins during the respiratory movements; for, even in the intercostal spaces no marked interruption to their distended condition is observable during quiet expiration. The slight expansion of the vena cava, which must take place within the thorax during inspiration, will be compensated by the simultaneous contraction of the abdominal cavity, and the increased pressure thereby caused on the inferior vena cava; and the contraction of the vena cava within the thorax, accompanying expiration, by the enlargement of the abdominal cavity, and the consequent diminution of pressure upon the inferior vena cava.

But there is no such thing as pressure on the vena cava during tranquil expiration, so that the blood cannot thereby be driven backwards in the vena cava, nor the valves of the cervical veins be called into action. Consequently the contractility of the lungs, which is of about equal force during inspiration as during expiration, occasions a continual hastening of the current of blood in the veins, when the respiration is normal, and in conjunction with the slight widening and narrowing which the upper and lower venæ cavæ undergo, prevents the appearance of any undulatory movements of the blood in the cervical veins.

As regards the influence of the contraction of the lungs on the other parts of the circulating organs, it must act both upon the auricles and ventricles, and favour their dilatation. It is overcome by the contraction of the auricles, and still more easily by that of the ventricles, but aids the dilatation of the auricles and of the ventricles.

The contractility of the lungs, indeed, opposes the contraction of the pulmonary artery, but its force is so slight in comparison with that which produces the systole and diastole of the pulmonary artery, that its absence can cause immediately no appreciable change in the condition of that artery. Not so, however, is it with the capillaries of the lungs, for these vessels are placed in the most favourable condition for the passage of the blood through them, in consequence of the tension exercised upon them by the contraction of the lungs.

The expansion of the pulmonary veins, caused by the contractility of the lungs, exercises no influence, either in impeding or in hastening the circulation of the blood. The contractility of the lungs is very insignificant when compared to that of the aorta; and even though it did produce an expansion of the thoracic aorta, such expansion would neither assist nor impede the circulation. Hence it appears that the contractility of the lungs aids the circulation of blood in the systemic venous system, assists the filling of the right auricle and ventricle, and the passage of the blood through the capillaries of the lungs; that it consumes a portion of the contractile power of the auricles and ventricles, and renders almost null the influence of the normal respiratory movements upon the circulation.

The actions which have been here ascribed to the contractility of the lungs are *most* manifestly shown during the act of impeded inspiration. If the cervical veins

previous to such forced inspiration are filled with blood, they will be emptied during its act, and even compressed by atmospheric pressure. Such an inspiration, moreover, consumes a great part of the contractile power of the auricles and ventricles, and it is possible, that the diminution of the pulse, so often observed when the inspiration is impeded, is occasionally caused by such consumption of the contractile power of the left ventricle. Thus we see, that an impeded inspiratory movement hinders the circulation.

The increased velocity of the current of blood flowing from the cervical veins and inferior vena cava into the superior vena cava and right auricle does not increase the rapidity of the current in the other veins; for these, on account of the yielding nature of their walls, whenever suddenly emptied of their blood, are compressed by the weight of the atmosphere, and the propagation of the increased velocity to the other portions of the blood thereby prevented. On the other hand, the loss of a part of the contractile force of the left ventricle necessarily causes a diminution of velocity in the systemic circulation. In like manner will the pulmonary circulation be retarded. The before mentioned inspiratory movements cause widening of the arteries, veins, and capillaries of the lungs, whereby the current is retarded. In addition to which there is also a corresponding diminution of the contractile power of the right ventricle.

An impeded expiration causes a like pressure upon the tensely rendered contents of the thorax and abdomen. The effect of this pressure must be different upon different parts of the circulating organs. The blood of the right auricle and the vena cava will be forced back into the venous trunks which open into these veins, until its reflux motion is arrested by their valves.

If the expiratory movement be of no great duration, its influence does not reach much beyond these valves; but when it is prolonged, the blood accumulates in all the veins which enter into the thorax and the abdomen, and this accumulation at length extends to the whole of the veins and the capillaries of the systemic circulation; increased pressure in the arteries is thereby required for its removal, and this takes place when, through the heart's movements, a portion of the contents of the vena cava are removed, and through their narrowing the influence of respiration upon them lessened.

Expiration opposes the expansion of the auricles and ventricles, which therefore is effected solely by the vis a tergo: but on the other hand it assists the contractions, and is thus a frequent cause of the increase of the pulse which is felt at the moment of expiration, when the breathing is impeded; a sudden expiratory movement, indeed, under such circumstances, as, for instance, coughing, occasionally creates a strong pulsation in the arteries during the heart's diastole, which pulsation is evidently caused by the sudden compression of the distended left ventricle and aorta.

Expiration tends to produce a narrowing of the arteries, veins, and capillaries of the lungs, and in this way increases the friction between the blood and the walls of the vessels. It impedes the pulmonary circulation, for the increase of the systolic power of the right ventricle produced by expiration is far from compensating for the increased friction between the blood and the vessels which is also produced by it.

In like manner expiration impedes the systemic circulation. Thus it appears, that during the forcible inspiratory effort, the circulation of the blood is interfered with by the consumption of a portion of the heart's force, and that during a forcible expiration it is likewise impeded by increase of the friction between the blood and its vessels in one great division of the circulating system. The alternation between inspiration and expiration under such circumstances eases the circulation, inasmuch as at the conversion of one act into the other the impeding force of the one ceases before that of the other begins.

There is no impediment to the entrance of air into lungs which are highly emphysematous, but whose bronchial tubes are neither narrowed nor occluded; the expiration is performed by the muscles of expiration on account of the lung having lost its contractile power, and even here, when there is no febrile action and the patient in repose, the expiratory effort is not great. But on account of the want of contractile force, the air is not driven equally out of all parts of the lungs, but more particularly from its superficial portions and its borders, and so conversely is the air drawn chiefly into those parts during inspiration. In the central divisions of the lungs there is but little renewal of the air. Respiratory movements of this kind

cannot facilitate the passage of the blood through the lungs; but on the contrary, the loss of the contractility of the lungs causes the filling of the heart's cavities to be performed entirely by the vis a tergo. In such cases the circulation is not facilitated by the alternation of the inspiratory and expiratory movements; the cervical veins, particularly when the patient lies down, remain distended with blood, not only during expiration, but also during inspiration, and there is also a high degree of cyanosis present, even when the breathing does not appear much affected.—*Monthly Journal of Med. Science, Feb.* 1854, *p.* 159.

34.—THE CONDITION OF THE RESPIRATION IN DISEASE.

By Dr. Samuel Wilks, Physician to the Surrey Dispensary.

[Dr. Wilks endeavours to show the increased number of respirations in all febrile affections. He was led to reflect upon this condition from reading in 'Carpenter's Physiology,' "that sometimes in typhus the number of respirations is depressed from the influence of the morbid poison in the system."]

It requires a little consideration to see clearly on what the number of respirations either in health or disease, depends. The amount of the respiratory process might, I think, be correctly stated to be dependent upon the amount of blood to be aerated, or, in more precise terms, the degree of the respiratory process would be a measure of the amount of effete matter in the blood, or that part of it which is brought to the lungs. The impurity of the blood, and consequently increased work of the lungs, would depend upon many causes, the wear and tear of the body, various morbid conditions, the derangement of other organs, &c. The only means for measuring acurately the amount of work done, would be by the spirometer, which should calculate the quantity of carbonic acid and vapour given off by the lungs. I am not aware that of late any very lengthened or systematic observations have been made on this subject, and those formerly published by various experimenters were scanty, and to some extent contradictory: but that the function of respiration varies in different diseases, there cannot be a doubt. From all analogy, from the condition of other organs in disease, as the kidney and urine in febrile affections, it is just to suppose that the excrementitious matter in the blood is at one time more in quantity than at another, and consequently the lungs would have to take their part in an increased effort to remove it. One measure of the amount of aeration done by the lungs is the number of respirations. For example: if a man breathing a certain number in a minute walks quickly, or exerts himself, and the number is increased, it is fair to suppose that during such time the whole respiratory process has been exalted; and this has been found by actual experiment to be true. The number of respirations, however, in itself is by no means a measure of the amount of the respiratory process. In children and infants, the number is much greater than in adults: also in the same person, from some accidental cause, the number may be augmented, when it is not probable that the function is increased. A pleurodynia, a pain in the abdomen or elsewhere, that is excited by a full inspiration, necessitates a shorter one; and, as a consequence, a larger number is required to make up the deficiency. Thus, two short inspirations may be equivalent to one deep one. In nervous hysterical women, we often see the whole chest not fully expanded, and quick hasty inspirations, interrupted with sighing, are required to make up the deficiency. Again, too, if the lung itself is impaired, so that only a part can work, as in phthisis, or from the pressure of a pleuritic effusion, an increased number of respirations is requisite. It is clear that a certain amount of aeration is required; and if the inspirations be small, they must be increased in number to make up the quantity. Thus, a phthisical patient may be breathing at a rate twice that which is natural, and yet be quite unaware of the circumstance. If an impediment occur to the passage of air in the lungs, then, besides a quickened, there is a difficult respiration. In diseases of the bronchial tubes, the dyspnœa and shortness of breath are most marked, and the non-aeration of the blood is shown by the lividity of the skin and venous congestion of all parts. When the lungs are congested from heart disease, a difficulty arises in the same way. The *besoin de respirer* seems to depend upon the presence of venous blood in the lungs, which, while there, is ever seeking for air to purify it, in order to allow it to pass onward. In short breath, when no difficulty is experienced by the patient, and no

lividity of the skin, we may suppose that the increased number of the respirations make up for the small individual ones. Whether the blood is sufficiently aerated, may be determined sometimes by another means, founded upon the well known experiments of Bernard upon the consumption of the hepatic sugar in the lungs. For example, a girl, eleven years of age, was the subject of pleuro-pneumonia of one lung, which rendered for a time that organ altogether useless. The breathing was at the rate of 50–60 a minute, yet even this did not satisfy the wants of the system with a supply of sufficient air. For two weeks, while the respiration was so affected, the urine contained a very notable quantity of sugar, and which only disappeared upon the subsidence of the pulmonary affection.

A diminished respiration is, as far as I know, always dependent upon a cause in the nervous system; and this, if not sufficient for the wants of the blood, produces a congestion in the lungs. Lately, there have been two cases under the care of Dr. Barlow, in Guy's Hospital, of disease at the base of the brain, which implicated the pneumogastric nerves. In one the respirations became more and more difficult; and a copious bronchial secretion was poured forth, just as in Dr. Reid's experiments of the division of the nerve; and in the other case, a slow consolidation occurred from inflammation. The slow respiration produced by poisoning by opium is soon followed by a congestion of the lungs.

Apart, however, from all such causes as are above named, and many others which influence the breathing, an increased number of respirations must in many cases be taken as a proof of an increased function. When the lungs are healthy, and there is no impediment to a full inspiration, I take it that an increased number is significant of an increased action in those organs. Now, if the *besoin de respirer* is dependent upon the amount of blood to be aerated, or effete matter to be removed, an increase of morbid or excrementitious matter in the blood must necessitate a greater number of inspirations. This I suppose to be the case in fever, where, with healthy lungs, a more rapid breathing always exists. In fact, in all febrile diseases, an increased number of respirations constantly prevails, and which I take as evidence of an increased respiratory function. By any one who has not examined the subject, it might be thought that this was merely owing to the general excitement of the system, and was a part of the more rapid circulation. This, however, is not the case; for, admitting that the actions of the lungs and heart do, to a certain extent, influence each other, as is seen after violent exertion where each may be doubled, yet, as regards the number of each, in many diseases, they are quite independent. One stroke of the heart throws out as much blood, whether that blood be comparatively pure, or loaded with effete material. In the latter case, however, more aeration and respiratory efforts would be required than in the former. The action of the heart and lungs, then, depending mainly upon different stimuli for their operation, we cannot expect to find any constant relation between them.

The constant increase in number of the respiratory act, in all febrile disease, I am surprised has not been more distinctly stated by authors. In fever it is the most constant symptom, excepting always the nervous depression, which is the only invariable phenomenon of this disease. I have before me a great many cases of fever, with a daily report, among other conditions, of the pulse and the respiration; and the latter shows very often much more marked change than the former. In an adult, the ratio of the respirations to the pulse is as 1 to $5\frac{1}{2}$ or 6, *i. e.*, making the pulse about 70, and the respiration 12–14 per minute; while in children, it is as 1 to $3\frac{1}{2}$ or 4; and in young infants, as 1 to $2\frac{1}{2}$. In most cases of fever (excluding of course those with pulmonic complication), the pulse being about 100, the respiration is 25 or 30 per minute, being a much higher ratio than in health; the proportion, in fact, is doubled, being as much as 1 to 3. During the course of the fever, the respiration remains high, while the pulse may be natural, or below the standard; so that, in fact no proportion can be obtained between them. A woman, aged 30, with typhus fever, a mulberry rash, and no chest or abdominal complication, had a pulse 116, while the respiration was 36 in the minute. The pulse soon became 100, and the respiration 32. The pulse sank next day to 90, and afterwards still lower, until it reached 52; while the respiration had only reached 26. The skin was still hot and dry. The pulse sank still lower, to 42, while the respiration was 22. The respiration is there seen to be as much above the standard of health, as the pulse below it. Perspiration broke out, and the patient convalesced,

when the pulse got up and the respiration went down, until each had reached its natural standard. Such a case is an example of the rule in fever—the independent course of the heart and the lungs in reference to their own peculiar duties. A man now under notice, with typhus, had his pulse 132, and respiration 36. As he is improving, his pulse has fallen to 72, while his respiration is still 24; the proportion between them being as 3 to 1. When fever patients get very low, their breathing is often more rapid than this; but then other operating causes come in to produce the result, as the congested state of the lungs. In such a case, where at first the pulse was 104, and the respiration 26, the patient sank down, until the respiration became 38; but at the same time, the pulse receded to 96. During the recovery, a rapid diminution of the numbers of respiration took place, and reached 14, when the pulse had only got to 64, and the patient convalescent. A man, with fever and great cerebral oppression, had his pulse for many days 44, while his respiration was 24. A woman with fever had a pulse 64, and respiration 32, or the former double the latter. As she progressed, the pulse remained the same for a fortnight, while the respiration gradually came down to the normal standard.

In other febrile diseases, I have found the result to be just the same, viz. that the numbers of respirations have always remained high, and out of all natural proportion to the pulse, while the fever lasts. In the exanthemata, as scarlatina, the result is the same as in common fever. As the skin and the lungs have to a certain extent a supplementary action, as regards the evolution of humidity, and even the aeration of the blood, I was anxious to find if the respiration was still high, when the skin was moist; and I found it to be as I before stated, if febrile symptoms existed. In rheumatism, invariably, as in fever, the respirations are increased in number, and this altogether independent of the heart's action. The effect of lemon-juice in lowering the pulse is well known, and exemplified in two of the following cases. The following are the first six in my note-book of acute rheumatism:—In the first case, the pulse was 96, and the respiration 36. In the next, the pulse was 100, and the respiration 30. In the next, the pulse was 88, and the respiration 28. In the fourth case, where was some cough, and an old cardiac bruit; the pulse was 132, and the respiration 40. In the next two, lemon-juice was given: no chest-symptoms, and profuse perspirations. In the former case, the pulse was 110, and the respiration 40. On the following day, the pulse was 100, and the respiration 32. In three days, the pulse had fallen to 76, while the respiration was still 32. During convalescence, the pulse remained steady, while the respiration gradually subsided to 17. In the last case, where lemon-juice was given, the pulse was at first 120, and the respiration 36. The pulse in three days lowered to 70, while the respiration had only reached 32. After three days more, the pulse was still 70, while the respiration had got down to 24. The pulse was thus seen rapidly to fall under the use of a drug which influenced the heart, while the respiration took its own course slowly to descend.

I have mentioned sufficient cases to draw more particular attention to the fact, that the respiratory act is exalted in febrile disease, and in proportion to the fever, and is not dependent upon, or proportional to, the action of the heart. As I before said, I do not allude to those cases where any pneumonia, pleuritis, or bronchitis exists, or even that hypostatic congestion in fever, which approaches so nearly to inflammation. In all such inflammatory affections of the chest, the rapid increase of the respiration is well marked, and draws attention to the condition of the lungs, and is a sign, indeed, not to be overlooked, particularly in the course of chronic disease, and where the patient is not likely to make any complaint. The state of breathing, however, to which I have particularly drawn attention, is not so rapid that the medical attendant observes it at all,—it is only by watching the movements of the chest that he becomes aware of their increased frequency.

I will just mention one or two other cases of disease to show the independent action of the heart and lungs, the nervous influence conveyed to one being different from that conveyed to the other, and the two little affecting each other. During the last year I have constantly seen a man the subject of some obscure cerebral affection, and who occasionally has fits of an epileptiform kind. His pulse is never more than 32 (and the heart's action corresponding); on one occasion it was 26, but the number of his respirations is normal. A young man died of disease of the brain, and his pulse was sometimes as low as 56, though on excitement, it soon rose to 80,

and yet his respiration during this time was 28–30. A young child I lately saw with hydrocephalic disease, had its respiration never more than 20, while the pulse was 120.

The condition of the heart and lungs must then in disease be considered to a great extent separately; for although the two organs are intimately connected, each has its own independent function and action. In a case of extreme bronchitis, with great pulmonary congestion, and a general venous stagnation, the state of the radial artery is taken as a test of the condition of the circulatory system and of the powers of the patient. Although the veins may be full to bursting, bloodletting is not considered, because the arterial system denotes emptiness and weakness, and the heart feebleness. A stimulant is often given in such cases when the pulse is small, but which only increases the evil. I believe, in such cases, a small bloodletting would often be useful in relieving the circulation, merely by its mechanical effects, and which, I apprehend, to be the principal use of this remedy. The following is a good example of this treatment:—A stout boy, seven years old, who had a chronic cough after pertussis, and who was in a condition commonly called asthmatic, was one winter's day seized with increased difficulty of breathing. The symptoms rapidly became so severe that death was expected. The head was thrown back, the face and body were blue, the eyes protruding, the dyspnœa excessive, the pulse quick and hardly to be felt, and a fatal issue evidently near at hand. The prominent jugular vein stood out temptingly. It was opened, some few ounces of dark blood escaped, the congestion was very soon relieved, the breathing became tranquillized, the boy lay back and was soon in a sound sleep, and the next day was comparatively well. I mention this as an instance exemplifying how useful and often necessary it is to regard the pulmonic circulation more distinctly, and more apart from that of the general circulation.

A very rapid respiration is generally indicative of an inflammatory affection of the lungs, unless it arise from a nervous cause, which is usually evident; and a difficult respiration accompanies affections of the air passages, and all causes which hinder a free ingress of air to the lungs. The purport of the present paper is to show more distinctly the increased rapidity of respiration in all febrile diseases, and which I take as an evidence of a temporarily increased function. Without, however, laying too much stress upon any of the theoretical statements I may have mentioned, I would at present only draw more particular attention to the fact, that in all febrile diseases, the *number* of respirations is much increased, and has a certain relation to the fever, and that this symptom is as constant as any alteration in the character of the pulse, skin, urine, &c. A more detailed account of the state of respiration in disease, I shall reserve for another communication.—*Association Med. Journal, Feb.* 17, 1854, *p.* 145.

35.—ON COUGH IN GENERAL, AND ON HOOPING-COUGH IN PARTICULAR.

By Dr. R. B. Todd, F.R.S., Physician to King's College Hospital.

[Cough is "a sudden convulsive expiratory effort." Irritation of any kind upon the pulmonary mucous membrane will produce *cough*;—irritation of the nasal mucous membrane will produce *sneezing*, another expulsive effort. It should be observed, that the nasal branch of the mucous membrane is supplied by sentient branches of the fifth nerve, while the pulmonary surface is supplied by branches of the vagus; and it has been proved that irritation of the vagus, in any part of its course, will produce cough similar to that which occurs in any disease of the respiratory organs.]

A common cause of cough—indeed, a much more common one than is generally supposed—depends on irritation of the pulmonary branches of the vagus, consequent on the pressure exerted on them by enlarged bronchial glands. Tumours, also, of various kinds are capable of exciting cough in a similar way, and the development of tubercles in the lungs may produce the same effect. Aneurisms not unfrequently give rise to a cough, which may baffle us in our endeavours to account for its production; and, indeed, cough is often a very important symptom in the diagnosis of aneurism, and one from which we frequently derive assistance in localising the disease. An aneurismal tumour may press upon the branches of

the vagus distributed to the trachea and bronchi, and thereby excite the most severe paroxysmal cough. Of this there is an excellent example now in Fisk ward. The patient is a man who was admitted for cough of this character. We carefully examined his chest without being able to discover any indications of disease in the lungs; but at length we obtained evidence of the existence of an aneurismal tumour, which, most probably by pressing upon some branches of the vagus, excited the violent cough, that constituted so prominent a feature in the case.

So, again, inflammatory ulceration of the trachea, whether primary or secondary, resulting from the pressure of an aneurismal tumour, especially about its bifurcation, where there are many branches of the pulmonary nerves, may cause a very distressing cough.

Thus, then, in reviewing the various circumstances under which cough may occur, you may enumerate the following kinds of this affection:—1st. The throat cough, the exciting cause of which may be either in the fauces or in the larynx. 2ndly. The tracheal or bronchial cough, when the trachea or primary bronchi are the irritated parts. 3rdly. The pulmonary cough, when the smaller ramifications of the bronchial tubes or the lungs are the seat of irritation. 4thly. Practical men will admit, I think, the existence of a cough dependent on gastric irritation; and, lastly, in persons of highly nervous temperament, there is the nervous cough, which, in most instances, is no more than a convulsive affection of the throat muscles.

Of these forms of cough, those which most frequently come under our observation are, the throat cough and the pulmonary or lung cough. Both are very prevalent at this time of the year. The former is the common cough of ordinary colds, and may be readily distinguished by the absence of all abnormal phenomena, connected with the breathing sounds, and by the swollen and red condition of the mucous membrane of the fauces, and more or less of hoarseness. In more chronic cases, this membrane is less or not at all swollen, and assumes a dusky red hue and a lax condition. Coughs of this kind are repeatedly mistaken and treated for pulmonary coughs, and the patients condemned to take large quantities of nauseous drugs; whereas many of them are easily curable by local treatment. This kind of cough is often exceedingly violent and distressing, and is not generally accompanied by any other sputa than throat mucus and saliva.

The more common form of lung-cough is that which attends bronchitis. This occurs generally in paroxysms; it is accompanied with expectoration, which is the more abundant in proportion to the extent and severity of the bronchial affection. We find it likewise in connexion with tubercular or other disorganisation of the lung, and the more severe in proportion to the extent of pulmonary destruction and consequent bronchial irritation. Under these circumstances, an expectoration, generally copious and purulent, follows the cough; and, indeed, the presence of this matter in the bronchial tubes very frequently aggravates the cough. Another form of lung-cough is short and dry, or accompanied by little or no expectoration, and apparently kept up by some permanent irritant in the lung's substance, as crude tubercles scattered among the bronchial ramifications. Such a cough is a common precursor of confirmed phthisis, or, more correctly, an attendant on its early stages.

Such are the ordinary causes and forms of cough.

Hooping-Cough. There is yet one other form so peculiar and characteristic, constituting as it does, not alone a symptom, but in truth a disease. The hooping-cough, so called from its peculiar final whoop, which is a sign that the patient is again taking breath, is not often brought under our notice in the wards of an hospital. It is much more common among the out-patients of an hospital than among the in-patients.

In the first stage, the symptoms are febrile and catarrhal, and the disease often passes for an ordinary cold. This state continues for ten or twelve days, and is then succeeded by the cough, the peculiar feature of which is, that it occurs in paroxysms, lasting some time, and following each other at variable intervals, and constituting the second stage of the disease; but, during the intervals between the paroxysms, the patient feels quite well, and one would hardly imagine there was anything the matter with him, except in the advanced periods of the complaint. The complete remission, which takes place, in many cases, between the paroxysms, is not the least curious feature of the disease.

[The third stage varies. The patient may recover, or certain changes may take

place in the lungs and circulating system, which may lead to a fatal termination. Dr. Todd proceeds:]

Let me direct your attention to these secondary changes, which occur in the lungs and vascular system, after this disease has lasted for some time. At first the lungs are not at all affected; so that hooping-cough can no more be considered a disease of these organs, than can an aneurismal or other tumour pressing upon the vagus nerve, and in this manner exciting cough, be so regarded. After the cough has continued for a long while, however, changes take place, affecting the lungs and the general appearance of the patient. The countenance becomes full and bloated, and the capillaries distended, especially those of the conjunctivæ, which look watery and swollen; and some of these minute vessels often burst, giving rise to some chemosis. From this state of countenance, a practical eye can generally at once recognise the nature of this malady, under which the patient labours.

All these changes result from the circulation in the capillaries being retarded, in consequence of the violence of the cough. At the same time, and for a like reason, the pulmonary circulation becomes similarly affected; the secretion of the bronchial tubes becomes altered; these tubes pour forth more freely than natural a watery mucus; the lungs become congested and œdematous; more or less crepitation is heard in different parts of these organs, according to the amount of fluid in the tubes, or œdema present; and this crepitation is usually most audible towards the lower part, being sometimes more distinct in one lung than in the other. The sound on percussion over the base of the lungs is duller than natural; and this arises mainly from the œdematous state of these organs, but in part, also, from the quantity of mucus present in the bronchial tubes, and from the expiratory efforts having emptied some lobules of air more completely than others (some lobules being, perhaps, perfectly emptied in this manner, and, consequently, quite collapsed); and, lastly, from the altered bronchial secretion plugging up the entrance to one or more lobules, and in this way preventing the free ingress of air. This condition of lung, in which the ingress of air to certain portions is prevented, and of which certain other portions have also been completely emptied of the contained air, has been long known to pathologists under the name of "carnification." A carnified lung has a fleshy look, does not crepitate under pressure, and sinks in water; and this condition may be induced by anything which causes the complete expulsion of the air out of the lung, or which entirely prevents the ingress of air into a lung previously devoid of air, as one which has never respired; and it is best seen in the lung of a fœtus which has never breathed. The most common cause of it, and that which, perhaps, developes it most completely, is the accumulation of fluid in the pleural cavity, by the pressure which it exerts on the adjacent lung. Carnification of the lung is carefully to be distinguished from hepatization. The former has nothing to do with inflammation, but merely consists in a condensation of the original pulmonary structure; the latter results from the effusion or exudation of an albumino-fibrinous material into the air-cells and finest bronchial tubes, by which the organ is rendered specifically heavier.

It was formerly supposed, that lobular pneumonia took place in hooping-cough. That pneumonia, just as bronchitis, may occur in the course of hooping-cough is certain; but the signs which used to be considered as produced by lobular inflammation, are, in reality, due to the simple exclusion of air from one or more lobules.

In the third stage of hooping-cough, if the case goes on favourably, there is a gradual abatement of the cough; the paroxysms become fewer and less severe, and the patient gradually returns to his normal state of health. But if, on the other hand, the progress is unfavourable, the symptoms become aggravated, the paroxysms more frequent, the bronchial tubes enlarged, the secretion of their relaxed mucous membrane increased, and, at length, the patient dies completely worn out and exhausted. If tubercles previously existed in the lungs in a quiescent condition, they are thrown into a state of activity, and symptoms of phthisis manifest themselves. Convulsions and coma, also, frequently accompany hooping-cough, especially in ill-nourished, badly-fed children, as the disease approaches its fatal termination. In these subjects, too, hooping-cough sometimes becomes complicated with an effusion of fluid into the lateral ventricles of the brain, and the phenomena of hydrocephalus are developed.

Causes.—In entering into the consideration of the causes of hooping-cough, one

of the first questions that suggests itself is, whether the malady has its seat in the lungs. That hooping-cough is clearly no disease of the lungs, is shown both by its clinical history, and by the fact, that auscultation can detect nothing abnormal in the voice or breath-sounds of a patient in the earlier stages of the complaint.

Its cause does not depend upon any peculiar state of the larynx or trachea; for there is no permanent affection of the voice, nor of the laryngeal muscles, nor of the glottis, nor are the symptoms such as diseases of the larynx or trachea usually give rise to.

Does the disease depend upon any morbid condition of the bronchial glands? The bronchial glands are often considerably enlarged, without such a cough as the peculiar paroxysmal one of this disease. Nor would the patient enjoy the complete freedom from distress which so often exists between the paroxysms of cough.

Having, then, set aside all these so-called causes of hooping-cough, the only supposition now left us as to the true cause of the disease is, that it depends upon some peculiar irritation of the vagus itself. In fact, hooping-cough is a special disease of this nerve, the irritation being quite as complete as when the exposed nerve is mechanically stimulated. But the cough differs from that which is produced by mechanical irritation of the nerve, in its coming on in paroxysms at longer or shorter intervals from each other, the patient's health during the intervals being very good. This paroxysmal character of the disease, with the complete state of health in the intervals, except when the constitution or the lungs have become damaged by the effects of the cough, associates hooping-cough with other diseases, the peculiar phenomena of which depend upon some poison in the blood, manifesting its presence by the specific action which it exercises upon some particular tissue, and by the interference which it seems to offer to the due performance of healthy function. For certain poisons undoubtedly appear to have a peculiar affinity for certain tissues; thus the poison of measles appears to have a special affinity for the mucous membrane of the bronchial tubes and bowels, that of scarlatina for the throat, and so on of the other acute specific diseases. In like manner, the poison which gives rise to the phenomena of hooping-cough, seems to have a peculiar affinity for the vagus nerve; but whether throughout the whole course of that nerve, at its centre or its periphery, it is impossible, in the present state of our knowledge, to affirm with any degree of accuracy. It is no valid objection to this view of the nature of the disease, to say, that after death, no structural alteration of the vagus can be distinguished, although Autenrieth and others state, that in cases of hooping-cough examined after death, they have found the vagus in a congested condition. But congestion is much more frequently the effect, than the cause of a disease; and it may be especially so in this case. In many nervous affections, as for instance in those distressing cases of neuralgia, in which the most intense pain has existed during life, no appreciable morbid condition of the nerves supposed to be the seat of the pain can be detected on the most careful examination after death. The poison in hooping-cough, whatever it be, produces no structural lesion in the nerves, and leaves nothing behind it, of which our senses can take cognizance.

Hooping-cough, then, as far as present knowledge enables us to speak, is a disease which runs a certain course, can be communicated from one person to another, and is probably due to the influence of a poison which gets into the system, and produces its local manifestations on the vagus nerve. It is not an inflammatory affection of any part, being simply dependent on a morbid state of the blood, caused by the introduction into it of some poison from without; and whatever inflammations may occur in the course of it must be regarded in the light of complications of the disease.

Treatment.—Having advanced this view of the nature of the disease, let me make a few observations upon its rational treatment, as founded upon these opinions.

Assuming hooping-cough to be a disease depending on the presence of a morbid poison in the blood (which is the most reasonable view of its pathology), to cure the affection perfectly, we ought to find an antidote for the poison which produces it. If we could find some material which, when introduced into the system after it had received the poison, would neutralise that poison, then we should have the same power over this malady as we now possess over intermittent fever, which, as you know, is also a paroxysmal disease, depending on the presence of some morbid poison in the system, and for which an antidote has been found in bark. But since,

unfortunately, no antidote for hooping-cough has as yet been discovered, it should not be our practice to look on in silence, and let the patient cough it out; but our aim should be to find the means of guarding him against the bad consequences of the cough, and to protect him from all those complications to which I have referred.

As the disease does not consist in an inflammatory condition of any part, we may at once dismiss all so-called antiphlogistic plans of treatment. That plan, indeed, has had a fair trial; and if it had any real power over the disease, we should have long ere this accumulated abundant evidence to prove its superiority. The tendency of all the usual antiphlogistic measures is to weaken the nutrition of the lungs and the nervous system, and to impoverish the blood; to reduce the quantity of its colouring-matter, to favour the accession of convulsions, and by the watery parts of the blood filtering through the walls of the blood-vessels, to promote the tendency to hydrocephalus.

The first point in the treatment is, carefully to guard the patient against the occurrence of bronchitis and pneumonia, as complications of the disease. Now, there is nothing which is so fertile a cause of bronchitis, as the admission of cold air to the bronchial mucous membrane. Consequently, the patient should be kept in a well-regulated temperature; if his illness occur in the winter, he should stay in-doors in a roomy, well-ventilated apartment, which is not too warm, but of a uniform heat He should be kept in this apartment, and not allowed to run about the house into rooms, or upon lobbies or staircases, which must present great variety of temperature. Early and close attention to the maintenance of a uniform temperature of the atmosphere in which the child resides, may save much subsequent mischief.

The second point is to uphold the general nutrition—to keep the patient well nourished. I do not mean, that the patient should be crammed or over-fed, but that his diet should be well regulated, and sufficient food of all kinds supplied, not only to satisfy the appetite, but also—and what is far more important—the real wants of the system. On this account, I object to keep children in this disease without animal food, as some so much insist on, though why they do so I cannot tell; for meat, in regulated quantities, and properly masticated, is more easily digested than almost anything else; and it differs from other alimentary substances, in the fact that its digestion consists in a simple process of solution in the stomach.

Another practice which exercises a most favourable influence on the nervous system (and it is this that we must look to after all), is sponging the chest with *cold water* once or twice a day. The parents of weakly, delicate children often object to this plan of treatment; but by ordering a little spirit to be mixed with the water, you not only may overcome their scruples, but in giving a stimulating quality the application increases its efficacy. This sponging of the back and front of the chest, night and morning, exercises a bracing and tonic influence on the nerves, and in this way often acts very beneficially in this disease. Spirituous embrocations often do good in a similar manner.

In a large number of cases, one can get on very well without having recourse to drugs. Those which you will find most useful, and which I would recommend to your notice, are sedative and antispasmodic remedies, in virtue of the power which they possess in allaying irritability of the nervous system generally, such as the various preparations of opium, henbane, conium, belladonna, and hydrocyanic acid. The non-nauseating expectorants, such as chloric ether, ammonia, and perhaps senega, may be also used; and astringents, to check excessive bronchial secretion, such as alum, sulphate of zinc, tannic and gallic acids, are sometimes necessary. But you must bear in mind, that such remedies should be used with caution, especially opiates, which in infancy and childhood are at all times to be given with great care, and more particularly if the lungs have become congested. The drugs which I would recommend you to avoid, are those which have a depressing and lowering tendency, such as tartar emetic and ipecacuanha. Many children, I am quite satisfied, while suffering from hooping-cough, have died from the too free and slovenly exhibition of these emetics.

If I had an opportunity of treating hooping-cough on a large scale, I would, in cases in which the paroxysms are very frequent and very severe, and when, as yet, the lungs are free from congestion, but not otherwise, give a fair trial to the careful inhalation of chloroform, with the view of endeavouring to cut short the paroxysm. We know that we can arrest the paroxysm of asthma in this way; why, then, should

we not be able to do the same with that of hooping-cough. I have also known laryngismus stridulus relieved by the use of chloroform; and it is now well proved that other convulsions of children may be checked by its means.

In the cases of delicate children, where there is great reason to fear that damage may be done to the lungs by the cough, this practice may prove very useful. But with reference to the administration of chloroform, this fact should always be borne in mind, and it cannot be too frequently reiterated, that due provison should be made for the simultaneous free admission of air, along with the vapour of chloroform. There is no point upon which some men seem to be more foolhardy than on this one; and it is by the neglect of attending to this, that the reputation of one of the most valuable remedies that has ever been applied to the relief of human suffering may be seriously damaged. I do not advise you to give chloroform so as to produce its full effect; it may be inhaled in small doses of ten or fifteen minims, which may be repeated at intervals, according to the severity of the paroxysms. When children are already in an exhausted and very depressed state, chloroform ought not to be administered by inhalation, or it should be given only in the smallest quantities.

Another remedy in the treatment of hooping-cough, to which I should very much like to give a fair trial, is the application of cold water, on the splashing plan, two or three times daily, with or without the inhalation of chloroform. Such a practice must be pursued with proper precautions; first, to maintain a warm temperature of the room in which it is done; and, secondly, to have the water thrown over the child rapidly, and not so as to wet the head. To let the back and chest receive the brunt of the splash. These measures combined would tend to diminish the severity of the paroxysms, ward off the occurrence of bronchitis and pneumonia, as complications of the disease, promote the general nutrition, stimulate the nervous system, and thus protect the patient from the damaging effects of the cough.—*Med. Times and Gazette, March* 4, 1854, *p.* 203.

36.—*Remarkable Effects of the Inhalation of Chloroform in Hooping-Cough.*—It is surprising that inhalations of chloroform should not have been suggested at an earlier period in the treatment of hooping-cough, one of the purest spasmodic affections in human pathology. Some years ago, Dr. Fleetwood Churchill, of Dublin, recommended inhalations of sulphuric ether in this affection; but the discovery of chloroform put a stop to its further experiment. The treatment of hooping-cough by chloroform is attended with difficulty in very young children. First, there is no warning of paroxysmal access; secondly, inasmuch as there are eight or ten expirations to one inspiration, the chloroform becomes evaporated before the infant has inhaled a sufficient quantity. [This objection may be easily rectified.—Ed.] Finally, young children have a veritable horror of anything coming against the mouth, so as to interfere with respiration, and they struggle against it with all their power. In the case of children, however, from twelve to fourteen years, of reasonable minds, all these difficulties disappear.

Four cases, treated by Dr. Fleetwood Churchill, were in the highest degree encouraging. The first, a young girl, aged 16, who had had hooping-cough for a month, especially severe during the night. She was recommended to inhale a few drops of chloroform upon a handkerchief, when she felt the paroxysm coming on. In two days the shrill sound had disappeared; and the cough subsided in about ten days. There was the same result with a patient aged 20. In the third case, a young lady, aged 18, chloroform was administered from the commencement, the cough was instantly suspended by the chloroform, but three weeks were required for cure. The fourth case was more severe, the spasmodic attacks were more violent and prolonged; the efforts at inspiration, and the shrill sound, such as to convey the idea that something was about to give way in the chest. The inhalations of chloroform reduced the number of the paroxysms to one-half, but without diminishing the intensity of the remainder. The patient complained of headache after the inhalation, consequently it was discontinued, and two to three minims of prussic acid, with two or three minims of the black drop, were substituted thrice a-day. The improvement

effected by the chloroform was permanent.—*Arch. de Méd. Belg.*—*Med. Times and Gazette, Feb.* 25, 1854, *p.* 191.

37.—FURTHER OBSERVATIONS ON THE CAUSE OF TUBERCULOSIS.

By Dr. James G. Atkinson, Physician to the Wakefield Dispensary.

In corroboration and extension of the views I formerly advanced (vide *Braithwaite's Retrospect*, vol. xxvii., p. 73), as to the probable cause of tuberculosis, my object is to show that the earliest stage of the disease consists in a diminished vital power, produced by various external depressing agents; that this results in a more energetic oxidation of the tissues, as a consequence of the amount of vital force having been thus lost, which retained the elements of the azotized principles in the form, order, and structure which belongs to them, and thus affording a less means of restraint against the incessant tendency of the oxygen of the atmosphere to act on their elements; and I attempted to show that tubercular deposits may, from the above causes, be regarded as the consequence of an irregular metamorphosis of tissues, and that these may be retarded, if not prevented, by the substitution of various forms of carbonized material, and that the only class of medicinal agents which may be considered decidedly prophylactic are those which sustain the vital tenacity in opposition to the chemical effects of oxygen. Of this latter class, alcohol appears to hold a prominent place; and in addition to the facts which I have already brought forward, I will here quote the opinions on this head of Dr. Cotton and Mr. Ancell in their recently published works, which go far to substantiate my views as to the fact of alcohol being in many instances one of the safeguards from tuberculosis. The former says, in the treatment of phthisis before tubercle is deposited, that "Wine or beer in moderate quantity should be included in the diet list, and I have seen conscientious scruples upon this matter overcome on many occasions with marked advantage." We also find that Mr. Ancell, although differing very much from Dr. Johnson and others, gives the following statement on the prophylactic powers of alcohol:—"Facts are not wanting which tend to establish that the tuberculous constitution, where there is no local disease, is benefited by the moderate use of these fluids (alcoholic), and this is sanctioned by theory, but then the stimulus must be moderate, uniform, constant, and accompanied by a generous diet, containing a proper proportion of these staminal principles, and essential elements of food, &c." He also quotes Dr. Peters, who remarks, that "Alcohol would seem to produce a state of blood opposite to that which obtains in this disease, and may thus prevent the development of it; and that the excessive use of alcohol does not destroy life by producing tuberculosis, but rather by producing other diseases, as those of the nervous system and of the liver."

It is very true that no hypothesis can take the place of statistical evidence; but it is rather more difficult than what it at first sight appears to be, to collect a sufficient amount of data to establish the truth or falsehood of my position. I have, however, endeavoured to furnish an approximation to correct results by examining the registries of deaths in this town for the last ten years, commencing on the 1st of May, 1843, to the 1st of May, 1853; and although I am aware the numbers are far too small to justify a decisive conclusion, they are, as far as they go, satisfactory. All will admit that perhaps no class takes more alcoholic stimulants, in proportion to the rest of the inhabitants, than publicans. Thus I have selected these out by way of experiment, to ascertain the relative mortality from phthisis in this class of men. I have arranged the deaths under the four following heads:—

Deaths from general diseases . . .	3329
„ „ phthisis	541
„ „ general diseases in publicans .	25
Phthisis in publicans	2

It appears, therefore, from the above figures, that rather more than one-sixth of the deaths amongst the whole population of the town arise from phthisis, whereas in publicans scarcely one-twelfth die from this disease during the same period. But these numbers, if taken without correction, fall far short of representing the real disparity between the deaths from phthisis among publicans, as compared with the

deaths occurring from phthisis among the population at large; for the 3,329 represents the deaths at all ages; but as about one-half of that number occurred in persons under fifteen, and as persons rarely die of phthisis under fifteen, and as publicans are all above fifteen, the figures should stand thus:—

Deaths above 15	1665
„ from phthisis	541
Publicans' deaths	25
„ „ from phthisis	2

Showing a general mortality among adults from phthisis of rather less than 1 in 3, and in publicans, 1 in 12½. Now, allowing great latitude for accidental mistakes, still the mortality by phthisis in publicans is comparatively small. What a more extensive investigation would prove, it would be difficult to say; however, there is here sufficient to demand further inquiries.

These facts are, I am aware, at variance with the observations of many excellent writers. I find Sir James Clark, nearly twenty years ago, remarks:—"We believe that the abuse of spirituous liquors among the lower classes in this country is productive of tuberculous disease, to an exent far beyond what is usually imagined—indeed, it is only necessary to observe the blanched, cadaverous aspect of the spirit-drinker, to be assured of the condition of his internal organs." Again, "the cases that are likely to be cured by the stimulating plan of treatment—by beef-steaks and porter—bear so small a proportion to the many that would be injured by it, that we do not consider it deserving of further notice." The late Dr. Graves, of Dublin, many years later, however, writes in a very different strain, and it is evidently apparent that medical opinion is by no means agreed on this subject. He says:—"Make your patient lay aside slops and tea; let him take wholesome fresh meat, bread, and good beer; the good diet will invigorate the system, and so far from producing inflammation, will do exactly the contrary." It may, however, be shown that in some cases drunkenness and dissipation have, without any doubt, been proved to be the positive exciting causes. This we do not for a moment deny, and in some instances they indubitably are; yet this admission does not invalidate the strength of my proposition, for I believe that every cause which tends to lower the vital tonicity acts as an exciting cause in producing tuberculosis, and nothing is more likely to depress the system, than the secondary effects resulting from drunkenness and dissipation, and therefore in this manner these may in some instances be productive of this disease. It is the temperate use of alcohol for which I contend, which, by retarding a too quick metamorphosis of tissues, checks or prevents the protein compounds from being too readily acted on by oxygen, which state occurs in the enfeebled, or in those hereditarily predisposed. In a word, then, the abuse of alcohol may be an exciting cause in producing tuberculosis; whereas, on the other hand, a moderate supply of this compound might possibly be used as a preventative agent in persons predisposed to phthisis.

I might assert that it is almost the fashion of the present day to consider tuberculosis strictly a blood disease. Mr. Ancell avers, "that the progressive debility is the progressive decrease of vital molecular changes, first in the blood, and secondly in the solids." This statement appears to require some consideration. Is it not more probable that the solids first give way? for of whatever the vital force may ultimately prove to consist, whether arising in consequence of certain molecular arrangements in the particles of matter, or from other unknown causes, yet with our present knowledge it may be regarded as an inherent force, and liable from disease or accident to be diminished in intensity; therefore, from the many causes which are known to lower the health, it would appear that this inherent force, which keeps together the molecules of the organism, is so far weakened as to allow oxygen to act upon the various elements with a greater degree of intensity than in a normal state; and if this be so, it is evident that the solids of the body ought rather to be considered as the primary seat of the disease. Vogel says, "all attempts to demonstrate such a specific principle in the blood have failed, and the difficulties of satisfying ourselves of the presence of a specific cytoblastema of this kind, differing from the normal nutritive fluid, are so great, that the correctness of such observations may reasonably be called in question." We have also the authority of Virchow (quoted from the 'Medico-Chirurgical Review,' No. xvi., p. 186), who says that the tubercle is not developed exudation, but merely metamorphosed pre-existing tissue-elements—elements

to which in their primary state the name of tubercle could not be applied; and that, consequently, the tuberculous metamorphosis is not the mark of a specific process of a particular constitution. Again, this author states that the tuberculization, the indubitably local process by which the body described by the name tubercle is formed, is not a peculiar specific exudation, but a peculiar transformation of tissue-elements, &c. It seems, however, that it may be so far regarded a blood disease, if we suppose that the oxygen, conveyed by means of the red corpuscles in the arterial blood to any part where a low degree of vitality exists, combines more readily with the carbon of the metamorphosed tissues, and thereby removes with an abnormal rapidity the carbon of these tissues. The remaining elements, now in a soluble state during this act of transformation, are carried away by the veins towards the heart, but not being in their usual and normal elementary proportions, are extremely liable to form new and abnormal compounds; for we must bear in mind that the metamorphosis of tissue, which is constantly going on in the adult and healthy man, is so evenly balanced, that exact portions of carbonic acid, urea, water, bile, &c., are daily formed, so that the man neither gains nor loses weight; indeed, this is carried on with so much precision, that the "amount of tissue metamorphosed in a given time may be measured by the quantity of nitrogen in the urine" (Liebig); but if from any cause, a disturbance in the equilibrium arises, it is natural to suppose that during the transformation of tissue great irregularities in these compounds might take place; for as Liebig shows that "all the organic nitrogenized constituents of the body, how different soever they may be in composition, are derived from protein;" "but if one of the forces necessary for vitality be impeded, the form and structure of the compound may be so far altered by these means, as to produce the resolution of the compound into one or more compounds with altered properties;" therefore, as the arterial blood in phthisis contains a larger proportion of oxygen, and, at the same time, the vital tonicity is weakened, the result is, in the first place, a larger quantity of carbonic acid generated; and, hence, some of the usual compounds in the metamorphosis of tissue cannot be produced, in consequence of their wanting the precise quantities of carbon. This being the case, recollecting that tubercle consists of the elements of tissue, with a deficiency of carbon, I propose it, as a strong probability, that in tuberculosis, the elements of protein are deposited, minus certain proportions of carbon. This is, in fact, tubercle, and the foregoing reasons are sufficient to lead me to suppose that this is the correct theory of its formation; but we can go still further, and by an antithetical mode of argument, show that when the blood becomes too highly carbonized tubercular deposits rarely, if ever, occur; for Rokitansky attaches great importance to an increased venosity of the blood, as an antagonistic to the formation of tubercle; and, under this head, he includes every influence which interferes directly or indirectly with oxygenization of the blood, either by diminishing the capacity of the chest, or hindering the expansion of the lungs, or by deranging the pulmonary circulation of blood, or by impeding the free access of air thereunto: for example, a case of spinal deformity narrowing the chest; a case of abdominal tumour encroaching upward, and causing dispnœa; a case of cyanosis maintaining deficient aeration of the blood; these would be cases in which, according to this observer of hundreds of thousands, the tubercular deposits would not arise." (*Braithwaite's Retrospect*, J. Simon, vol. xxii.) "Again, it is somewhat remarkable that in those parts of the body where the access of oxygen is impeded, peculiar compounds, containing much carbon are given out: for example, in the arm-pits, or in the soles of the feet." (Liebig.) We have attempted to show that when the vital powers are lowered tubercular deposits generally occur; now, according to Vogel, that when the system is lowered in typhus, depositions are found in various parts of the body, similar to those in scrofulosis, the essential difference being, that the whole proceeding is accomplished more rapidly in one than in the other, and it is frequently quite impossible to distinguish tubercle from typhus matter. He, moreover, quotes Engel as an authority, that in proportion to the weakness of the vital powers, so the facility for tubercular deposition is increased.

It would, indeed, be a work of supererogation to give a detail of many of the well-known causes productive of tuberculosis. I may, however, just allude to the fact, that nearly all the writers of the present day have abandoned the ancient hyphothesis of inflammation being ranked as the common cause of this disease. Every fact observable, both in man and the lower animals, shows that whatever tends to depress

and lower the system renders it eminently liable to a deposition of tubercle. Most of the cows kept in the stables at Paris die phthisical (Louis), which effect certainly cannot be ascribed to cold. Phthisis, again, is more frequent at old age, with females than males (Louis). The occupations of seamen, butchers, and tanners are, on the other hand, generally considered unfavourable to the occurrence of consumption (Sir J. Clark). Lombard calculated that the disease is only one half as prevalent among persons in easy circumstances as it is among the great bulk of the population. Phthisis also frequently follows both continued and intermittent fever, so close as to make them appear exciting causes; and to this list we might also add dyspepsia. The disposition of this disease, again, appears to be strongest in that condition of the body called lymphatic; whereas, when the system seems to be more highly vitalized, such as probably occurs in pregnancy, this condition appears to retard, if not to suspend, its progress; and finally, as Dr. Todd observes, "it is easy to understand how this nutritive matrix, either from deficient vitality, or some other condition, may be formed of a nature below the standard of organization, and how in this state the nutritive molecules may, instead of tissue, be converted into tubercles;"—all which evidence corroborates my views, that the first stage of phthisis may strictly be considered as one in which the vital force is acting with diminished resistance.

It has recently been advanced that the condition of the body favourable to the development of cancer is almost incompatible with that of tuberculosis, or, as Mr. Simon observes, "the one excludes the other." In cancer, this author alleges there is an obstinate excess of vitality, which will not be quenched. Now, if the first step favourable to the deposition of tubercle be a want of vital power, does the foregoing fact concerning cancer antithetically uphold my proposition as to the first stage of tuberculosis? or, in other words, as the organism is acting with more than a normal energy in one disease, and with a diminished vital power in the other, does this, I repeat, account for tuberculosis and cancer being incompatible in the same body?

From the foregoing, we draw the following conclusions:—

1st. That the ratio of mortality from phthisis, in publicans, is less than one-fourth of the ordinary ratio among other classes of the adult population.

2nd. That the first step in tuberculosis seems to consist in some molecular change in the substance of the body—probably owing to a deficient vital attractive power among the particles—and that compounds like alcohol act by sustaining this attraction.

3rd. That phthisis is characterized by an excess of oxygen circulating in the system; and that when the blood becomes too highly carbonized from various diseases, tubercles are not deposited—to wit, in cyanosis, &c.

4th. That deposits similar in constitution to tubercle are produced under other circumstances than phthisis, and that this always occurs when the vital system is lowered—as, for instance, in typhus; and, on the other hand, when the vital force seems to be in excess, which takes place in cancer, tubercles are seldom if ever formed.

Lastly. From these we infer that the treatment most likely to prevent deposition will be generous living—wine, beer, &c.—with tonics; and that medicines containing much carbon, as cod-liver oil, tannic acid, &c., are of use, as furnishing a pabulum by which the excess of oxygen in this disease may become saturated, without acting upon the tissues.—*Lancet, Feb.* 25, 1854, *p.* 207.

38.—CO-EXISTENCE OF TUBERCULOSIS WITH CYANOSIS;

PRODUCTION OF HEMIPLEGIA BY DETACHMENT OF FIBRINOUS DEPOSIT FROM THE HEART.

By Dr. H. Fearnside, Physician to the Preston Dispensary.

The case, of which an outline is given below, supplies an important correction, and also confirmation, of opinions which have been recently promulgated.

It is now generally taught by pathologists, that a venous condition of the blood is eminently antagonistic to tubercular development and deposit. The doctrine is thus broadly laid down by Rokitansky: "All cyanoses, or rather all forms of disease of

the heart, vessels or lungs, inducing cyanosis of various kinds and degrees, are incompatible with tuberculosis, against which cyanosis offers a complete protection; and herein we find a key for the solution of the immunity against tuberculosis afforded by many conditions which at first sight appear to differ so widely from one another."

A similar statement is made by Mr. Simon in his excellent 'Lectures on General Pathology:' "There is one signal peculiarity which attends this chronic venous condition of the blood, which I must not leave unmentioned. Not only in extreme cases of cyanosis, but in all chronic diseases where, from any cause whatever, there is defective arterialization of the blood, the patient enjoys one privilege. He is exempt (perhaps absolutely, but at least all but absolutely, exempt) from tubercular disease."

In the subject of the following report, cyanosis of the most perfect description was associated with equally well-marked tuberculosis.

T. W., a stout young man, aged 19, was first seen by me in the autumn of the year 1852. He was the son of robust parents, and his brothers and sisters were strong and healthy. Shortly after birth, his complexion was noticed as somewhat livid and blue, but the circumstance appears to have attracted no special attention for some years, until the occurrence of an accident, to which his friends ascribed his subsequent bad health. On the occasion referred to, being then seven or eight years of age, he fell into some water, and was in imminent danger of drowning. Some time afterwards, he spent the whole of a cold winter's night in the open air, having been inadvertently shut up in the yard of an unoccupied house. An illness of some duration, but the precise nature of which cannot now be ascertained, was the result. The darkness of his complexion became more conspicuous, and he began to suffer from cough, and difficulty of breathing, on any rapid movement; but his general growth and development were not arrested or impaired; he became an apprentice in a foundry; and at the time when he fell under my notice, his size and stature were not inferior to those of other young men of a similar age. A few months before the period mentioned, his breathing became still more embarrassed, and his feet and legs were observed to be swollen at night; and for the preceding two months, he had been unable to follow his employment. When he consulted me, his face appeared swollen, and was darkly livid; his hands were blue and cold; and the lower limbs œdematous. His respiration was short and quick, and he had a frequent cough, with considerable expectoration. The heart's action was unnaturally strong and frequent; the cardiac dulness on percussion extended from above the fourth rib to the lower margin of the chest, and from an inch to the left of a line descending from the mammilla to the right border of the sternum. Both sounds were normal over the apex, and occasionally both were heard distinct and clear over the base of the organ; more frequently, however, the first sound was rough and murmurish, and over the second and third left costal cartilages a fine but loud grating murmur was heard. The superficial veins were dilated and prominent. There was some want of resonance on percussion under the clavicles, when the breath sound was harsh, and mixed with coarse crepitation, especially on the right side. Elsewhere, the breath sound was obscured by sonorous and liquid rhonchi, but there was no evidence of pulmonary condensation. The secreting organs were sluggish in their action; the bowels torpid; the urine high coloured and scanty.

Such were the phenomena which the case presented on the first and only opportunity which I had of examining it last year. When I next saw the patient (about two months ago), he was moribund. I found that in the interval he had been gradually declining in health, his cough having become more constant, his breathing more difficult, and the dropsy more considerable. Four days previously he had been down stairs, and, whilst there, had suddenly, and without any premonitory symptoms, been attacked with paralysis of the left side of the body. I found him in bed, breathing heavily, and panting: his face was swollen, and of a dark purple hue: he was rather deaf, but his intelligence was not impaired; his replies to questions were correct. There was extreme restlessness; he was continually desirous of being moved. Considerable anasarca of the lower part of the body was present. The paralysis affected both motion and sensation, and was complete. The heart was beating tumultuously and irregularly, and the pulse was small, rapid, and indistinct. There was marked dulness on percussion under both clavicles; and on the right side,

loud cavernous respiration and gurgling were audible. Over the rest of the lungs, loud mucous and sonorous rhonchi were heard, and so loudly as greatly to obscure the heart's sounds. He died on the following day, and his body was examined about twenty-four hours after death.

The lividity of the face, extremities, and posterior parts of the body, was very great.

Chest. There were very strong adhesions between the upper parts of both lungs and the walls of the chest. A cavity capable of containing an ordinary sized orange, was found in the apex of the *right lung*, and connected with it were a number of smaller cavities. The walls of the principal one were formed chiefly by thickened pleura, and a number of obliterated vessels projected from its irregular internal surface. A large quantity of tubercular matter, both grey and yellow, but chiefly the latter, was dispersed throughout the upper lobe, and collected in masses around the excavations. Some tubercular deposit was also found in the lower lobe of the lung. The upper lobe of the *left lung* was similarly affected, but to a less extent; several cavities existed there, but they were small ones, and the surrounding tubercular matter was less abundant.—***Association Med. Journal, March*** 10, 1854, *p.* 222.

39.—ON THE ACTION OF COD-LIVER OIL AS A CURATIVE AGENT IN THE TREATMENT OF DISEASE.

By Dr. R. M. Glover, F.R.S.E., Lecturer on Chemistry at the Royal Free Hospital Medical College.

Oils, alcohol, and the carburetted hydrogen of mines, constantly inhaled by the coal-miners, all agree essentially in affording to the blood large quantities of combustible substances; and I may mention along with this, that I have known, during my experience, many instances of young surgeons of small fortunes being compelled to go a voyage in a Greenland ship, and thus saved for some time at least from hereditary phthisis. Now during these voyages there is great consumption of nutritious substances, and perhaps not a little of alcoholic fluid.

I infer that the efficiency of the oils, and generally speaking, the hydro-carburets in tuberculosis, is due to some chemical influence which they exercise. This is supposing my premises admitted.

In the last part of Dr. Pereira's work, just published, the editors, in seeking to explain the operation of cod-liver oil, attempt to return to the idea that it is due to the iodine and bromine in the oil. They say—"as the oil contains iodine, and as it proves most successful in those maladies in which this element proves successful, it has been suggested that iodine is its active principle. Taufflied, however, denies this, and asserts that the properties of the two are not identical, for the one succeeds where the other fails. Is bromine the active agent? (It must not be forgotten that iodine and bromine are combined organically with some of the constituents of this oil, and in such manner that they are not to be immediately recognised by the ordinary tests. This fact may perhaps tend to develope a peculiar action of iodine and bromine, and endow them with an efficacy not otherwise attainable.)"

Now in 100 parts of oil there are never more than 0·04 parts iodine, and as iodine exists in all fish, what possible virtue can it have, especially as it no doubt exists combined with alkaline or earthy bodies? A fabulous reputation seems attached to bromine. I have taken the bromide of sodium to my dinner instead of common salt.

The fact is that all the chlorides, bromides, and iodides are analogous; they afford a beautiful illustration of the greatest law ever observed in therapeutics, and of which very few seem to be capable of realizing an adequate idea—viz., that the chemical properties of bodies are exactly imitated by their physiological and medicinal properties.

Some years ago, as an illustration of this great law, I selected the group of chlorine, bromine, and iodine, so closely related in their chemical and physical properties, and as the compounds of bromine had been least examined they were especially chosen; and I think I proved that the physiological activity of these bodies was as their solubility, and their facility of decomposition, with this allowance, that as chlorine is the more active element of the three, chemically, so it and its compounds are the more active of the three physiologically, *cæteris paribus*. We find everywhere bromine and its compounds occupying an intermediate place between the others physiologically as they do chemically.

In the electro-positive salts—say, the chloride, bromide, and iodide of potassium—

the chloride is the least easy of decomposition and the least soluble, the bromide more so, the iodide most, in the ratio of their activity. When we come to the electro-negative compounds—say, those of mercury—when the affinities come to be inverted, there the physiological and medicinal powers are inverted also; for instance, iodine will decompose the chloride of mercury, while it will not decompose the chloride of potassium, and the chloride here is the most active, the bromide less so, the iodide least. Now I account for this by supposing that the activity of such substances depends in great part upon a series of molecular changes which they produce in the system, and that the elements liberated in the nascent form in the system produce a series of combinations and decompositions; but the fact remains, that these bodies are closely related, and as cod-liver oil contains more chlorides than bromides or iodides, the activity of it may just as well be attributed to the first class as to the others. But *omne ignotum est pro magnifico.* In the 'Archives Generales d'Anatomie,' for 1846, there is a paper which would seem to controvert some of these views: but for the present I shall content myself with stating that I adhere to them.

The late Mr. West, of Leeds, in an analysis of the mineral water at Shotley Bridge, in the county of Durham,—which, if his statement be correct, has wrongly fallen into desuetude,—states that there are traces of bromine, and attributes great probable powers to it. Now, as the proportion of bromides—for of course the bromine must exist in combination—is in infinitesimal proportion to the chlorides, this idea is another illustration of the hallucination which many men appear to entertain with regard to these bodies.

As a further illustration of the relationship between all the properties of the chlorides, bromides, and iodides, I may give an extract from the recent letter of Dr. Cogswell on the ' Employment of the Chlorate of Potass in Cholera,' published in the 'Lancet' of October 22nd. He found the endosmotic properties of the chloride, bromide, and iodide of potassium to be as follows :—

" Elevation in inches—1st hour : chloride, 1·5 ; bromide, 5 ; iodide, 3. 2nd hour : chloride, 4 ; bromide, 2 ; iodide, 1." Always the chloride occupies the first position, the bromide the second, and the iodide the third. As the extraordinary confirmation which these results afforded to my conclusions was unknown at the time, and not thought of by Dr. Cogswell, they are the more valuable.

In conclusion, in my work on Scrofula, I say that the merits of cod-liver oil are in all probability " as a tonic, from the resinous principle it contains; by stimulating animal heat ; occasionally by acting as an aperient ; and also as a deobstruent, more particularly by increasing the quantity of urine."—*Lancet, Nov.* 12, 1853, *p.* 459.

40.—*On Expectoration as a Means of Diagnosis.* By Dr. THEOPHILUS THOMPSON, F.R.S., &c.—The most characteristic appearances attending the series of changes of the expectoration in the different stages of pulmonary consumption may be conveniently described under four divisions, namely,

First, The salivary or frothy.

Secondly, The mucous.

Thirdly, The flocculent.

Fourthly, The purulent or porraceous.

The first is what you would expect from irritation ; the result either of pulmonary congestion, or or slight tubercular deposit.

The second would indicate a more confirmed affection of the bronchial tubes.

The third is peculiarly characteristic of secretion from a vomica, modified by the absorption of its thinner constituents.

The fourth is indicative of phthisis far advanced, and (if unmixed with froth) usually involving both lungs.—*Med. Times and Gazette, Feb.* 25, 1854, *p.* 190.

41.—*On the Appearance of the Gums in Consumption.*—Dr. THOMPSON remarks, " Considerable attention to this inquiry has impressed me with a conviction of the frequent existence, in consumptive subjects, of a mark at the reflected edge of the gums, usually deeper in colour than the adjoining surface, and producing a fes-

tooned appearance; this mark is in some persons a mere streak; in others, a margin, sometimes more than a line in breadth. In the most decided cases, this margin is of a vermillion tint, inclining to lake."

[This streak on the gums, Dr. Thompson states, is often among the earliest signs of pulmonary consumption. In reference to the value of this sign as an aid to diagnosis, Dr Thompson observes:]

"When in either sex it coincides with a pulse not materially altered in frequency by change from the sitting to the standing posture, the presence of phthisis may with high probability be assumed, even before having recourse to auscultation."—*Ibid*, *p.* 190.

42.—*On Cocoa-Nut Oil as a Substitute for Cod-Liver Oil.*—Dr. THOMPSON says, "Among the patients to whom cocoa-nut oil was given, there were some instances of arrested phthisis, as decided as any I have been accustomed to attribute to the use of cod-liver oil, over which it possesses advantages in reference to economy and palatableness: and it is interesting to remark that its efficacy was experienced by some who had previously taken cod oil uselessly, and by others who had discontinued it on account of nausea."—*Ibid*, *p.* 190.

43.—*Treatment of the Diarrhœa of Phthisis.*—In the diarrhœa of phthisis, Dr. THOMPSON employs trisnitrate of bismuth in doses of five grains, combined with three grains of gum arabic and two of magnesia, every four or six hours."—*Ibid*, *p.* 190.

44.—*On Hemoptysis.*—DR. T. THOMPSON "doubts if hemoptysis ever precedes the deposit of tubercle in the lung, and thinks that, in many cases, the local loss of blood may be advantageous to the patient by relieving congestion. He deprecates 'undue haste' in arresting the hemoptysis, and adds, 'as a general rule, it is better to moderate this symptom by producing determination to other organs than to employ direct astringents.'

Should the hemorrhage be passive, and direct astringents be required in consequence of the loss of blood being excessive, alum is, according to our author, one of the best that can be employed; this remedy acts, he says, 'more efficiently when allowed to dissolve in the mouth, than when taken in mixture.' The following is the prescription Dr. Thompson recommends:—

'Take of powdered gum arabic, and of white sugar, each three drachms; powdered tragacanth a drachm and a-half; alum two drachms; catechu three drachms; rose water as much as sufficient for a mass to be formed into sixty lozenges.'

Acetate of lead is preferred to gallic acid, while turpentine is said to be one of the most certain and suitable remedies, in a majority of instances.'"—*Ibid*, *p.* 190.

45.—*On the Treatment of Colliquative Sweating in Phthisis.* [DR. T. THOMPSON says he has given the following preparation "with the most satisfactory results," viz., oxide of zinc and extract of hyosciamus, of each four grains, to be made into two pills, and taken at bed time.

The following cases by DR. W. MILLER, of Liverpool, illustrate the value of this treatment.]

Sophia, aged 27, married, ill about eight months; has all the symptoms of phthisis well marked, particularly the night perspirations. I directed the above pills, and on the third day the perspirations had entirely ceased, and have not since returned.

Catherine, aged 33, married, ill a long time; complains of profuse night perspirations, which entirely ceased in a few days after commencing the pills, and have not returned.

Fanny, aged 20, unmarried; first seen March 18, 1854; has all the usual symptoms of phthisis. Profuse night perspirations. I prescribed cod-liver oil, half an ounce, three times a day, and zinc and hyosciamus pills at bed time.

March 21st. Is much more comfortable; had very little perspiration last night.

I have given these pills in several other cases; and I think they have the great advantage over other remedies of allaying the night perspirations, and, at the same time, not giving rise to the violent attacks of diarrhœa, which so often come on when the perspirations are subdued.—*Lancet, April* 1, 1854, *p.* 377.

46.—*Use of Lobelia in Asthma.*—The lobelia inflata, a drug much praised and abused by quacks, and somewhat slighted by the profession, is, we observe, in constant use among the out-patients of the City Hospital for Diseases of the Chest. In doses of ten minims three times a day, it appears frequently to produce most admirable effects in cases of chronic bronchitis complicated with tendency to paroxysmal asthma. It is commonly given in conjunction with sedatives, expectorants, or stomachics, often agreeing remarkably well with the latter. Patients taking it frequently complain of much nausea and sense of depression during the half-hour or so following each dose; but it seems, on the whole, to decidedly improve the appetite and digestion. If the nausea be excessive, combination with a few drops of dilute hydrocyanic acid is often useful.—*Med. Times and Gazette, Nov.* 12, 1853, *p.* 502.

47.—*Nervous Asthma.*—M. Morpain, a French physician, has found that by burning brown paper soaked in a solution of saltpetre in the room of an asthmatic patient, the latter will obtain instantaneous relief. M. Carrie, working out this fact, has had the following poly-pharmaceutical paper prepared for the same purpose:—Pasteboard broken down with hot water, four ounces; nitrate of potash, two ounces; belladonna, stramonium, digitalis, lobelia inflata, all in powder, each twenty grains; myrrh and olibanum, of each two drachms and a half. Incorporate all these with the paste, divide the mass into sheets of the thickness of three lines; dry, and divide in little square pieces. Burn them in little saucers in a well shut-up room.—*Lancet, Dec.* 31, 1853, *p.* 625.

48.—*New Respirator.*—Mr. Stenhouse, the professor of Chemistry at St. Bartholomew's, has invented a new form of respirator, which it is believed will be competent to purify the air breathed through it from all noxious gases. It consists of a layer of charcoal enclosed in fine gauze. Should it be found efficient and of convenient use, it will be a great boon to all engaged in occupations which involve exposure to malarious or miasmatic influences.—*Medical Times and Gazette, March* 4, 1854, *p.* 226.

DISEASES OF THE ORGANS OF DIGESTION.

49.—ON DEFICIENT SECRETION OF GASTRIC JUICE.—SLOW AND IMPERFECT DIGESTION.

By Dr. George Budd, F.R.S., Professor of Medicine, King's College.

[It must be borne in mind that when the stomach is empty of food, it contains no gastric juice. The secretion takes place when food is brought in contact with its walls.]

The outpouring of the juice when food touches the mucous membrane, like the outpouring of saliva from the presence of food in the mouth, is excited by reflex nervous influence; that is, the impression of the food on the surface is transmitted by the nerves to some central part of the nervous system, and thence reflected to excite the action of the secreting apparatus.

This reflex nervous influence, which causes the outpouring of gastric acid on the contact of food with the mucous membrane of the stomach, may be excessive ; or it may be excited by other impressions on the mucous membrane of the stomach than those arising from the presence of food; or, lastly, it may be excited by irritation in other organs.

And, on the contrary, when there is food in the stomach and gastric juice is required, the nervous influence exciting the secretion may be deficient in energy, and the juice may be poured out in too small quantity for complete and easy digestion.

Dr. Wilson Philip showed, by various experiments on rabbits and other animals, that if the eighth pair of nerves be divided in the neck, any food which the creatures may afterwards eat usually remains in the stomach undigested; and, after death, the coats are not dissolved by the gastric juice, however long the animal may have lain dead.

The experiments did not warrant the conclusion that Dr. W. Philip drew from them,—that the secretion of gastric juice is entirely dependent on an influence transmitted through these nerves; but they proved that the division of the nerves, and the injury and shock of operation, arrested the secretion for a time.

It is well known that long-continued watchfulness, or excessive fatigue, or great mental excitement, will prevent or take away the feeling of hunger, and destroy for a time the power of digestion.

A man in the wild excitement of delirium tremens has a repugnance for food of every kind. When the delirium subsides, and the nervous system has been refreshed by a few hours' sleep, the appetite and power of digestion return.

[The depressing passions, fear and anger, lessen the secretion of the gastric juice. Sedentary and indolent habits, and the habitual consumption of more food than the system with such habits requires, also produce the same effect.]

It has been clearly shown by the experiments of Spallanzani and Dr. Beaumont, that the quantity of juice required for digestion is proportioned to the quantity of food. When gastric juice has dissolved a certain quantity of food, it is saturated, and can dissolve no more. The digestive power may, indeed, be restored, in a certain degree, by the addition of water, or by the addition of muriatic or lactic acid; but to carry digestion much further there must be a fresh quantity of the juice. If, then, a man eats too frequently or too much, the gastric juice may be inadequate for the proper and easy digestion of food, without any fault fairly attributable to the stomach. The organ is simply over-taxed. Indigestion, brought on in this way, is the natural penalty for the violation of a natural law, or, as a humorous writer has termed it, "the remorse of a guilty stomach."

In all these ways, gastric juice may be secreted in insufficient quantity for the purpose of digestion.

We may next consider the form of indigestion thus resulting.

A necessary effect of an insufficient secretion of gastric juice is of course, slowness of digestion. The food, instead of being completely digested, and passing out of the stomach, in two or three hours, remains undigested, or only partially digested, for a much longer time,—it may be, for twelve, or even twenty-four hours. The undigested portions of food remain in the stomach, and, during the slow process of digestion, there is a sense of weight or uneasiness at the pit of the stomach, which gradually lessens, and at length ceases, as the food gets dissolved and passes out of the stomach. If any portions of the food remain solid, there is often, at the end of some hours, when the stomach is getting empty, a distressing feeling of spasm, or cramp, at the pit of the stomach.

If portions of food remain undigested many hours, they irritate the lining membrane of the stomach, and cause headache, a slightly furred tongue, and feelings of general disorder.

The remedies for this habitual slow digestion, in persons otherwise healthy, are to be sought in proper regulation of the diet and habits of life, and in medicines which tend to increase the secretion of gastric juice.

The diet should consist of food easily soluble, the stomach should never be overloaded, and there should be a sufficient interval between meals. Care should especially be taken to avoid new bread and tough meat, and not to oppress the stomach by malt liquors, or to indulge in fermented drinks of any kind beyond the point which, from *habit* or otherwise, the state of the nervous system may require. Bodily fatigue

and nervous exhaustion should be avoided, as these states lessen the secretion of gastric juice; but mind and body should be sufficiently exercised. We were intended to be active creatures, and a life of indolence is the infraction of a natural law, which always brings a penalty of some kind or other. A certain amount of bodily exercise and agreeable occupation of the mind, promotes digestion, and improves in various ways the general health, and contributes greatly to the preservation both the bodily and mental powers.

Various medicines—ipecacuanha, rhubarb, cayenne pepper—taken in small doses, stimulate the lining membrane of the stomach and cause a more abundant outpouring of gastric juice, and may often be taken with advantage just before the principal meals by persons whose digestion is habitually slow. For example, from half a grain to two grains of ipecacuanha and three or four grains of rhubarb, or a grain of capsicum with three or four grains of rhubarb, in a pill, may be taken before dinner, or before breakfast and before dinner.

Salt and mustard have an action on the coats of the stomach of the same kind. A large quantity of salt taken at breakfast will sometimes relieve the headache and much of the other discomfort that follows a debauch. Mustard, as is well known, promotes, with most people, the digestion of beef and other rich meats; and its habitual use will occasionally be found greatly to mitigate the discomfort that results from an habitual slow digestion. White mustard-seed, swallowed whole, was, indeed, some years ago, one of the popular remedies for indigestion; and I have met with more than one instance of aggravated indigestion in which much benefit was attributed to its use. It was given in a dose of a tablespoonful two or three times a day. These stimulants for the stomach—ipecacuanha, salt, mustard—when taken in considerable doses, are all of them powerful emetics. As a remedy for habitual slow digestion, ipecacuanha seems to me to be more effectual than any of the others. The dose of it should, of course, be too small to cause a feeling of nausea.

The uneasiness at the stomach that arises from slow digestion may often be mitigated by drinking a small glass of water, or by eating a lump of sugar an hour or two after meals, or when the uneasiness begins to be felt.

Where digestion is habitually slow and feeble, much benefit of more lasting kind may frequently be derived from the muriatic or the nitro-muriatic acid, taken for some weeks together, half an hour or three parts of an hour before the principal meals.

I need hardly say that, when digestion is slow and feeble, care should be taken not to give at the time of meals, or while digestion is going on, alkalies, the alkaline salts, or other medicines that suspend or enfeeble the action of the gastric juice.

But mere slowness of digestion is not the only ill effect of a scanty or depraved secretion of the gastric juice. It often happens when the stomach is weak and disordered, or when more food is eaten than the healthy stomach can readily master, and especially when at the same time it secretes an unhealthy mucus prone to ferment, that the undigested food in the stomach undergoes putrefactive changes, or some unnatural fermentative process, instead of proper digestion.

One of the most remarkable properties of the gastric juice is that of preventing the putrefaction of meat. Spallanzani first ascertained the fact, that gastric juice not only prevents the putrefaction of meat, but has the power to arrest the process of putrefaction already begun, and even to correct the fetor of meat already tainted. Later physiologists have ascertained that it likewise hinders the lactic, acetic, and alcoholic fermentations, which consequently do not occur in the stomach during healthy digestion.

But if the gastric juice be insufficient in quantity, or faulty in composition, this controlling power may be inadequate to its purpose, and the food on the stomach may undergo some fermentative changes that ought not to take place.

The precise nature and the products of these changes depend on the quality of the food, and on the state of the substance that acts as a ferment. If this substance be decomposing mucus, as Lehmann has suggested that it commonly is, the kind of fermentation will very much depend on the stage of decomposition which this has reached.

In some cases, the food undergoes common putrefactive changes, and sulphuretted hydrogen is evolved. Distension and uneasiness of the stomach come on, with frequent eructation of sulphuretted hydrogen,—belchings as of rotten eggs. This is

attended with severe frontal headache—often with a feeling of chilliness—and the other disorder familiarly known as the effects of surfeit. All this disorder is speedily removed when the stomach is emptied by a vomit.

This kind of indigestion is a common effect of over-eating, even in young and healthy persons, and hence is popularly known as a "surfeit." Delicate and growing boys often eat largely from a sense of exhaustion, and soon afterwards engage in active play; the food is indigested, and surfeit occurs. It is more prone to occur in persons with carious teeth, when offensive saliva passes into the stomach.

It frequently occurs too, as we have seen, in cancer of the stomach; where offensive secretions are poured into the stomach; while the food, in consequence of an obstacle in the pyloric orifice of the stomach, or of some impediment to the free action of its muscular fibres, is unduly detained there.

When "a surfeit" occurs in a young and healthy person, the quickest and best way of removing the disorder is to give an emetic, and so free the stomach from the putrefying matter; and afterwards, if need be, to empty the bowels by some quickly-acting purge.

In malignant disease of the stomach, in which this kind of disorder is especially apt to occur, emetics, which irritate the lining membrane of the stomach and may cause violent efforts of vomiting, are unsafe, and an attempt should rather be made to prevent the disorder by proper regulation of the diet. As charcoal has antiseptic properties, toasted bread may be taken instead of plain bread, toast and water instead of plain water, or a small quantity of charcoal in substance may be given.

Should the disorder occur in spite of precautions such as these, the progress of the putrefactive changes may be stayed, and the further evolution of gas be prevented, by small doses of creosote. From half a minim to a minim of creosote is sufficient, and may be given in a pill at the time of meals, or as soon afterwards as the putrefactive changes begin.

It much more commonly happens, when digestion is feeble, that the contents of the stomach undergo some other kind of fermentative process.

If the food have consisted chiefly of vegetables, fruits, new bread, ill-fermented malt liquors, new wines, it has a tendency to pass into a fermentation by which carbonic acid is freely evolved. This causes a great distension of the stomach, and a distressing sense of uneasiness, frequently relieved for the moment by the eructation of inodorous gas—chiefly carbonic acid gas.

If the stomach be emptied by a vomit, the rejected matter is seen to be in a state of active fermentation.

In the case of St. Martin, Dr. Beaumont had an opportunity of witnessing this process in the stomach itself. St. Martin had been in the woods all day, picking whortleberries, and had eaten no other food from seven in the morning to eight in the evening. Dr. Beaumont then looked into the stomach, and found it, to use his own expression, "full of berries and chemifying aliment, frothing and foaming, like fermenting beer or cider."

If food be eaten which is already in a state of fermentation, the fermentative process may continue in the stomach itself. When, for example, new wine is drunk,—wine that is in a state of fermentation,—the fermentation sometimes continues; is, perhaps, even increased by the heat of the stomach; and carbonic acid is evolved very rapidly. The stomach becomes greatly distended, and it is stated that the consequent disorder is sometimes so great as to destroy life. Cattle, when first placed in a field of fresh clover, or other rich pasture, frequently eat more than their stomachs can digest. The vegetable mass ferments in the stomach, as it would at the same temperature out of the body, and carbonic acid and hydrogen (and sometimes hydrogen and sulphuretted hydrogen) are evolved in great quantity. In consequence of the peculiar structure of the stomach in cattle, these gases cannot escape through the œsophagus, and the stomach becomes enormously distended; in some cases even to bursting.

In man the gas escapes readily through the œsophagus, so that, even when much of it is evolved, the immediate ill effects of this kind of indigestion are very rarely serious. In the course of a few hours the fermentative process is at an end, and the distension of the stomach subsides.

The cases in which medical advice is most frequently sought are, however, not *those* where distressing distension and flatulence result from mere over-feeding in

healthy persons, but where this kind of indigestion in less degree is habitual, so that uneasiness of the stomach and flatulence are commonly felt an hour or two after the principal meals.

The ill effects of the disorder are, then, not confined to distension and uneasiness of the stomach. The fermentative processes in the stomach give rise to products which, when absorbed into the blood, have an injurious influence on the general health, and the frequent repetition of the indigestion prevents the proper nutrition of the body. The patient is usually depressed in spirits, is less capable than in health of mental exertion, and has lost some of his customary energy and strength. It often happens that oxalic acid is one of the products of the unhealthy digestion, and that crystals of oxalate of lime may be found in the urine. In many such cases the indigestion itself results from a faulty state of the general health, or from overwork, or depressing influences of other kinds, and the disorder belongs to a class to which I shall call your attention in a future lecture.

When thus arising, the flatulent distension of the stomach may sometimes be prevented by the pills composed of ipecacuanha and rhubarb, or capsicum and rhubarb, of which I have before spoken; but a remedy which succeeds more frequently is the nitro-muriatic acid,—ten minims of each of the dilute acids twice a day,—taken half an hour, or three-quarters of an hour before the principal meals.

Much good will result, also, from horse-exercise, change of air, and other influences which tend to improve the general health.

The diet should be light and nourishing, and the patient should eat sparingly of succulent vegetables, fruits, and saccharine substances in general, and should carefully abstain from ill-fermented malt liquors.

A more common kind of fermentation in the stomach is the lactic, by which the starchy principles of the food are converted into lactic acid. This kind of fermentation, if fermentation it can rightly be called, is most common in nervous persons with feeble digestion, in whom it not unfrequently happens that acid collects in great quantity in the stomach after meals. They often familiarly tell us, that almost everything they eat turns to an acid. If vomiting occur an hour or two after meals, the matter thrown up is very acid, and, on analysis, the acidity has been often found to be mainly due to lactic acid.

It was supposed by Dr. Prout that much of the lactic acid which collects in the stomach in such cases is derived from the blood, and that it is secreted by the coats of the stomach. Whether this be so or not there can be little doubt that it is often formed in great quantity in the stomach from the starchy principles of the food. It is possible that the secretion of lactic acid by the coats of the stomach may promote the conversion of the saccharine principles of the food into this substance.

This lactic fermentation is not, like the kinds of fermentation of which I have before spoken, attended with evolution of gas. It causes, therefore, not flatulence, but heartburn and pain in the stomach, which is often very severe, and which is sometimes attended with a feeling of constriction, or cramp.

The uneasiness that results from undue acidity thus arising, may be relieved for the time by alkalies, and may often be prevented by giving before meals, medicines which have an astringent or bracing effect on the coats of the stomach—bismuth and magnesia, or, better still, the mineral acids, especially the sulphuric acid.

Lactic acid, out of the body, is apt to undergo another kind of fermentation, which causes the slow evolution of hydrogen and carbonic acid, and which leads to the formation of butyric acid.

There can be little doubt that the same changes occasionally take place within the intestinal canal. Hydrogen is one of the gases that have been found in the intestines, and now and then the matter vomited by persons of weak digestion has the sour rancid smell of butyric acid.

I have spoken of several kinds of fermentation as if they existed separately; but it very commonly happens, although one kind may predominate, and give a character to the disorder, that these several kinds, and others of which little is known, may go on simultaneously, or rather, perhaps, in quick succession in the stomach, and that various gases, carbonic acid, hydrogen, and sulphuretted hydrogen, and various acids, lactic, butyric, etc., are formed. The consequent disorder is not confined to the stomach. The acid and unnatural products of digestion may pass into the bowels, fret their lining membrane, and excite griping pain and purging; some

noxious matters may be absorbed, and cause headache and other disorder; and if the indigestion recur frequently, the general health must suffer.

Severe attacks of vomiting and purging, commonly designated English cholera, seem often the result of fermentation or putrefaction of food in the stomach, by which some highly-irritating matter is formed. If I may judge from my own experience, such attacks generally come on in the evening, soon after dinner, or at night soon after supper, and are much more frequently consequent on a meal of meat or cheese, than on the eating of fruits, to which, perhaps from the greater frequency of the disorder in autumn, they are generally ascribed.

I have found no remedy so effectual in checking the disorder as pills composed of creosote and opium.

Our knowledge of the various kinds of fermentation is still very imperfect. As it becomes more extensive and exact, our knowledge of various forms of indigestion will, doubtless, become more precise, and our power of relieving them greater than it now is.—*Med. Times and Gazette, Jan.* 28, 1854, *p.* 77.

50.—ON INDIGESTION ARISING FROM DEFECTIVE ACTION OF ONE OF THE EXCRETING ORGANS.

By Dr. George Budd, F.R.S., &c.

[The state of the nervous system not only influences the action of the stomach, but it is also affected by the condition of the blood, because from the blood are derived the secretions which assist in digestion.]

The stomach is in more direct relation with the liver than with any other important excreting gland. The stomach and the liver are parts of the same great apparatus, whose office it is to supply from the crude matters taken as food, fit material for the sustenance of the body. The action of the one organ is in some degree complemental to that of the other. Dr. Prout long ago advanced the opinion, that the muriatic acid of the gastric juice is furnished by the decomposition of chloride of sodium or common salt, and that the soda thus set free in the blood is eliminated with the bile. He was early led to the opinion, which the researches of Matteucci, Liebig, and others, tend in some measure to support, that the principal digestive organs constitute a kind of galvanic apparatus, of which the mucous membrane of the stomach may be considered the acid, or positive pole, and the hepatic system the alkaline, or negative pole.

Dr. Bence Jones has lately shown, that soon after meals, when the stomach secretes a large quantity of muriatic acid, the urine has a tendency to become alkaline; and that the soda set free on the decomposition of the chloride of sodium which furnishes the muriatic acid of the gastric juice, instead of being all eliminated by the liver, as Prout seems to have supposed, is in part eliminated by the kidneys. Other observers have shown that, when the stomach is pouring out a large quantity of acid, the alkalinity of the saliva likewise increases; and, since the increased alkalinity of the urine and saliva at such times results from the increased quantity of free soda in the blood, it is probable that the same law holds for all other secretions of which soda is an essential constituent. But still there is reason to believe that the opinion advanced by Prout is in part true, and that an intimate relation—and one, probably, of the kind which Prout supposed—exists between the secreting functions of the stomach and the liver.

If the secretion of the liver be defective in consequence of deficient power in the organ, or in consequence of the congestion of it that results from high living and indolent habits, the functions of the stomach are almost invariably disordered, and, in conjunction with a slight yellow tinge in the conjunctiva and skin, there is a coated tongue, an impaired appetite, nausea and especial disrelish of rich dishes, constipation: and often, with this defective action of the stomach and liver, there is disturbed or unrefreshing sleep, and great depression of spirits.

The remedies for this condition are, a light and simple diet, with water for drink; fresh air; exercise, to promote perspiration, without fatigue; and medicines that increase the secretions of the liver, bowels, and kidney. A moderate dose of blue pill, repeated two or three times on alternate nights, and a drachm of sulphate of magnesia in infusion of senna every morning, answers well for persons strong

enough to bear it. To others, fifteen grains of sesquicarbonate of soda, twice a-day, with enough of the potassio-tartrate of soda to act gently on the bowels, or some other medicine of similar action, may be given with benefit.

Again, when the kidneys imperfectly perform their office, so that urea and other constituents of the urine contaminate the blood, the functions of the stomach are generally more or less disordered.

This is especially seen in advanced stages of Bright's disease, when the kidneys are atrophied. The prominent symptom of the stomach disorder in such cases is nausea or vomiting. The vomiting is sometimes so frequent as greatly to interfere with nutrition, and is the only disorder of stomach complained of. In other cases, the ordinary effects of slow and feeble digestion—a sense of weight and oppression after meals, with flatulent distension of the stomach, or undue acidity—co-exist with the nausea or vomiting; and sometimes these effects of slow and feeble digestion exist alone.

In chronic granular disease of the kidneys there are several conditions which tend to disorder the functions of the stomach.

First, there is, perhaps, in many cases, as when the kidney is irritated by a calculus, a purely nervous influence starting from the kidney, which is reflected upon the stomach, and tends to derange it.

In the next place, the gastric juice becomes vitiated by admixture with urea, and probably with other hurtful excrementitious matters. The mucous membrane of the stomach must, as I have before observed, be regarded as an expanded gland, destined to furnish abundant secretions, and, by virtue of its active secreting function, occasionally instrumental in eliminating noxious principles from the blood. It has been found, indeed, on chemical analysis, that, in malignant cholera, and in those diseases of the kidneys in which the secretion of urine is very defective, the matters vomited contain urea, or the muriate or carbonate of ammonia derived from the decomposition of it.

The elimination of these foreign matters, or the reflex nervous influence, may, moreover, excite the secretion of gastric acid when there is no food in the stomach to dissolve; or may cause congestion of the stomach, and thus lessen the supply of gastric juice; or may lead, directly or indirectly, to an inflammatory condition of its lining membrane, and so not only lessen the supply of gastric juice, but also cause a secretion of unhealthy mucus, which, from its proneness to ferment, is an additional source of gastric disorder.

I have already observed, when speaking of the effects of arsenic, that a stomach-disorder caused by some noxious matter in the blood is apt, if it exceed certain limits, to be followed by an analogous disorder of the bowels. The cause of disturbance acts alike, though in different degrees, on the different parts of the intestinal canal. An illustration of this is seen in granular disease of the kidney, in which diarrhœa not unfrequently co-exists or alternates with the gastric disorder, and in which the matters voided by the bowels, as well as those ejected from the stomach, have been found to contain urea.

In granular disease of the kidney, the blood is always impoverished, and there is a source of further exhaustion in the abiding drainage of albumen from the system. It is very important, therefore, to remedy the disorder of digestion, and, so, in the greatest possible extent, to supply the waste. Not unfrequently, indeed, more relief can be given by remedying the stomach disorder than by any measures in our power that directly affect the kidney itself.

The vomiting or nausea may generally be controlled by the dilute hydrocyanic acid, which may be given in doses of four or five minims three times a-day, and which may be conjoined with small doses of potash or soda, if any indications of undue acidity likewise exist.

Another remedy, very effectual in controlling the vomiting, is creosote, of which a minim or less may be given, in a bread pill, three times a-day, before meals.

If these means should fail, the vomiting and much of the associated gastric disorder may often be stopped for a time by a few purgative doses of cream of tartar and jalap, which probably relieve the stomach by causing a more abundant elimination of the noxious matter by the bowels. This medicine is best given, as are most others of similar action, in a single dose sufficient for the desired object, in the morning, before breakfast, since it will then, in addition to the drain it causes from the mucous

membrane, only sweep away the refuse of digestion; whereas if it be given at other times or in repeated doses during the day, it sweeps away food that has been more or less digested, but the nutritious elements of which have not been absorbed.

I need hardly remark, that when such impediments to healthy digestion exist, very great care should be taken in diet. If the food be hard of digestion, or if more be eaten than the stomach can easily dissolve, it not only oppresses the stomach and causes much temporary discomfort, but may excite an inflammatory condition of the mucous membrane, and thus still further weaken the digestive power.

The blood may be rendered impure and the stomach be deranged, not only by defective action of the great excreting organs, but also from fault in the processes concerned in the waste and repair of the tissues in other parts of the body. The blood is the storehouse from which the different textures of the body draw the materials for their nourishment and growth. Physiology teaches us that the organic constituents of most of the textures of the body are being constantly renewed—that as time flows on, although the form remains nearly the same, the matter is changed. Every exercise of power causes an expenditure of the substance of the organ that ministers to it. Some constituent of the organ is resolved into simpler chemical compounds, which are then given back to the blood, and the blood furnishes to the organ fresh materials to supply the waste. There is thus a constant interchange between the blood and the tissues; the organic constituents of the tissues waste—are resolved, that is, into simpler chemical combinations,—and are then absorbed into the blood, and thrown off by the different excreting organs; and the elements of the tissues thus taken away are reconstructed out of fresh materials supplied by the blood. These processes of waste and repair are what have been termed the processes of secondary assimilation. It is essential to the purity of the blood that they be rightly performed. There are several ways in which they may be deranged. The expenditure of power may be too great, the tissues may waste too rapidly, and thus more effete matter may pass into the blood than the excreting organs can remove; or without this, either in the waste or in the reconstruction of the tissues, some substances may be formed, and may pass into the blood, which are difficult of excretion, or which disorder the action of other organs.

It was Dr. Prout who fixed our attention on this great class of disorders—disorders not depending on any visible structural change, but on some fault in those subtle processes that minister to nutrition. There are, doubtless, more disorders of this class than we have yet distinguished. They all lead to an unnatural state of the blood, from the excess of effete matter or from the presence of some unnatural and injurious principle in it; and often this leads again to an unnatural state of the urine—the great drain through which the soluble effete matters of the body are cast off.

These states of faulty assimilation are, then, in some instances, revealed to us by the condition of the urine.

One of the most important of them, as far as digestion is concerned, is that characterised by the formation of lithic acid in undue quantity, and in which an excess of this substance exists habitually or frequently in the urine.

This particular derangement of the nutritive processes often has its origin, as you know, in a peculiarity of constitution—the so-called lithic diathesis—which is permanent, and which is especially frequent in the members of gouty families and in persons of middle age who lead the kind of life that conduces to gout; who eat, that is, large quantities of animal food, and drink freely of malt liquors.

In such persons, occasional indigestion is very common—indigestion marked chiefly by excessive acidity of the stomach and heartburn, and by the condition of the urine, which contains a sediment of lithate of ammonia or lithic acid gravel, or which, without this, is high colored, and more than commonly acid. With this acid indigestion there is often insufficient action of the liver, a bilious tinge in the complexion, costive bowels, a coated tongue, which sometimes dries at night, and heavy or disturbed and unrefreshing sleep.

In this form of indigestion, much relief is given by alkalies, which neutralise the excess of acid in the stomach when digestion is over, and thus stop or prevent the uneasy sensations to which it gives rise. The soluble alkalies do good also, and more permanent good, by promoting the secretion of the liver and the kidneys. The bicarbonate of soda and the bicarbonate of potash are, in most instances, the best

forms in which these can be given, and the best time for giving them, as was pointed out by Dr. Prout, is two or three hours after the principal meals. Fifteen grains of either, two or three times a day, is, in most cases, a sufficient dose; and, if there be a sense of heat in the stomach, this may be conjoined, as Prout recommended, with a few grains of nitre.

At the same time, a few doses of blue pill may be given on alternate nights, further to promote the secretion of the liver, and colocynth, or colocynth with henbane, to keep up free action of the bowels.

The use of the alkalies should be continued for some weeks, and, if any gouty symptoms exist, a grain of acetous extract of colchicum may be given at night.

Persons who suffer from this kind of indigestion should endeavor to promote the action of the lungs and the skin, and, with this object, should take active exercise, be much in open air, and sleep in an airy bed-room; and they should live on a simple and abstemious diet—not eating too largely of animal food, and carefully avoiding ill-fermented malt liquors, rich dishes, heavy pastry, and cheese. Where total abstinence is not feasible, the alcoholic drinks best suited to them are pale sherry, in small quantity, or brandy, largely diluted with water.

By such means the indigestion may often be stopped, the excessive acidity of the urine corrected, and the general health greatly improved; but the disorders have their origin in a peculiarity which is constitutional and abiding, and they are, therefore, very liable to recur.

Another faulty state of the general health attended with indigestion is now and then met with, in which the urine is apt to contain oxalic acid in considerable quantity, and to precipitate, on standing, the well-known octohedral crystals of oxalate of lime.

Dr. Prout supposed that a more than common disposition to the formation of oxalic acid in the system is indicative of a peculiarity of constitution; and he expressed this supposed peculiarity by the term, *oxalic diathesis.*

Oxalic acid, which is composed of only carbon and oxygen, with the elements of water, and which exists in many plants, and may be readily formed by the oxidation of various animal and vegetable substances, may come to be present in the urine in several ways.

1st. It may be taken in the food; may escape conversion in the stomach, and after its absorption in the blood; and may thus pass off in the urine, in combination with lime.

Many vegetables contain oxalic acid in combination with alkalies or with lime. The stalks of rhubarb, which are largely eaten in this country in the spring in tarts, and sorrel, which is much used abroad as salad, contain it in considerable quantity in combination with alkalies. In some persons, the oxalic acid taken in these articles of food is changed in the process of digestion, or undergoes conversion in the blood by the influence of oxygen, and consequently does not pass off, as oxalic acid, in the urine. In others, whose power of digestion is weaker, or in whom respiration is less active, the oxalic acid escapes conversion and passes off in the urine in combination with lime.

This may happen in persons who are in perfect health, and who have no marked tendency to the formation of oxalic acid in the system. With this occasional, and, if we may so term it, *accidental* presence of oxalic acid in the urine, we have nothing here to do. It may lead to the formation of a small calculus of oxalate of lime, and so have very serious results; but it does not denote any abiding disorder of digestion or nutrition.

2nd. Oxalic acid may be formed in the body, and, as Dr. Garrod has shown, its presence may be detected in the blood when none of it is taken in the food.

The oxalic acid which is formed in the body may, possibly, be derived immediately from the saccharine elements of the food, or from lithic acid and other substances that result from the waste of the tissues, or from both these sources at once.

We know, indeed, that out of the body oxalic acid may be readily formed, under the influence of oxidising agents, from sugar, starch, and their chemical equivalents; and Liebig and Wohler have shown that it may also be readily formed from lithic acid.

Dr. Prout long ago inferred that oxalic acid might be derived from the waste of the tissues, from the fact that its habitual or frequent presence in considerable

quantity in the urine is often associated with an unhealthy condition of the skin, and also from the fact, that, in rheumatic and in hectic fever, large quantities of another non-nitrogenous acid—lactic acid—which must, he imagined, have their source in waste of the tissues, are formed or set free in the body.

Oxalic acid is said to be constantly present in the urine of herbivorous animals, and, according to Lehmann, it often exists in the urine of men in perfect health, but in such minute quantity that it is not readily discovered. It may then, he says, be sometimes made apparent by freezing the urine. When urine is frozen, a great part of the water crystallises in a comparatively pure state, and, if this be removed, the concentrated urine that remains deposits crystals of oxalate of lime.

The quantity of oxalic acid is found to be increased, so that the urine, without any such concentration, deposits numerous crystals of oxalate of lime, under many circumstances:

1. It is increased, according to Lehmann, by emphysema of the lungs, by the diminished elasticity of the lungs that results from repeated attacks of catarrh, and by other conditions that impede respiration, and thus prevent perfect oxidation of the carbon, which passes off in the urine as oxalic acid, instead of escaping in the form of carbonic acid by the lungs.

It is also increased, according to him, by drinks that contain much carbonic acid, and by the alkaline bicarbonates and vegetable salts; and he accounts for this increase by supposing that the superfluous carbonic acid which has entered the blood, or been generated there from the salts of the vegetable acids, must obstruct the absorption of oxygen and impede the perfect oxidation of those substances in the blood which support respiration.

2. The quantity of oxalic acid in the urine is often increased, as Dr. Walshe has shown, during convalescence from typhus fever, rheumatic fever, and other acute diseases, in states of anemia, and in the course of many chronic diseases that interfere with nutrition.

3. A considerable deposit of oxalate of lime often exists in the urine of persons who have no appreciable disease of the lung or other organs, and who have had no positive illness, but who have disordered digestion and look and feel out of condition. As the general health improves, the oxalate of lime disappears from the urine; but under the influence of fatigue and many other conditions unfavourable to health, the indigestion and other ailments recur, and the oxalate of lime appears again.

Dr. Prout, observing an especial tendency to this kind of disorder in certain persons and certain families, and believing that diabetes, which he considered on chemical grounds to be a kindred malady, was constitutional, and to a certain extent hereditary, was led to suppose that the especial tendency to the formation of oxalic acid and the concomitant disorder of health had its origin in a peculiarity of constitution, and, as I have already mentioned, he designated this supposed peculiar constitution the oxalic diathesis. There is, however, no constant connexion between the disordered state of health and the presence of oxalate of lime in the urine.

A copious deposit of oxalate of lime may result from other conditions, and the ailments we are considering may exist without the oxalate. Very often, however, the ailments and the oxalate co-exist, and constitute and define a disorder which it is very important to recognise, because experience has shown that it can generally be controlled or much mitigated by a particular plan of treatment.

To the patient nothing seems amiss in the urine. He complains only of his indigestion and its accompanying ailments. It is the form of this indigestion that we have now to consider.

It presents no striking or distinctive characters. The appetite is often good, sometimes more craving than in health; digestion is not slower than it should be; there is no pain, no sense of oppression or weight at the stomach immediately after meals; there is seldom vomiting or heartburn. But much discomfort is caused by flatulent distension of the stomach especially two or three hours after a meal, when the stomach is getting empty, and sometimes there is pain in the stomach at that time. With this flatulent distension of the stomach there are often uneasy sensations in the belly which seem to result from flatulent distension of the duodenum or the colon.

The disorder of digestion is usually associated with other symptoms of constitutional disorder, and especially with nervous symptoms. The patient in most cases grows somewhat thinner, is weak and readily fatigued, sleeps badly, is troubled with palpitation, is irritable in temper and depressed in spirits and often hypochondriacal in a high degree, and has, or fancies he has, deficiency of sexual power. Frequently, too, he has a wearing pain, or a sensation of uneasiness across the loins, and empties his bladder more frequently than in health—symptoms resulting probably from irritation of the urinary organs by the passage of the oxalic acid through them.

In some cases there is evidence of defective or faulty nutrition of the skin in a scaly eruption or a succession of boils.

These ailments vary greatly in degree in different cases. In some, they are very trifling; in others, the restlessness at night and the mental depression unfit the patient for his usual occupations, and render his life miserable. They are none of them peculiar to the disorder we are considering. Taken together, indeed, they often form a group that is tolerably significant; but the only sure evidence that oxalic acid is in excess, is the presence of numerous crystals of oxalate of lime in the urine.

The urine then is always acid, generally more acid than in health; in most cases of an amber colour and transparent, and of moderate or rather high specific gravity. If allowed to stand in a conical glass vessel, a light cloud of mucus may form at the bottom, but there is often no other deposit.

In some cases, however, together with oxalate of lime, the urine contains an excess of urea, and is of higher specific gravity than in health; or it contains an excess of lithic acid, or of lithate of ammonia, and these substances are deposited at the bottom of the glass.

The crystals of oxalate of lime are not visible to the naked eye, except when many of them are entangled in a dense cloud of mucus at the bottom of the glass, in which case they can sometimes be seen as minute glistening points: but may, as Dr. Golding Bird first showed us, in all cases, be readily discovered by the help of the microscope. The detection of them is important, because it throws light on the nature of the disorder and may determine the plan of treatment.

A disposition to such recurring derangements of the general health, and to the formation of oxalic acid in the system, may—like the disposition to gout, diabetes, and other kinds of faulty assimilation—either be inherited, or be induced, where no inherited tendency to it exists, by certain external conditions or habits of life.

The conditions which Dr. Prout assigned as most conducive to it, are—residence in a damp or malarious district, the too abundant consumption of sugar, the depressing emotions of anxiety and grief, exhausting bodily or mental labour, long courses of mercury, excessive smoking, and, indeed, all other circumstances that seriously depress the vital powers.

Among the inhabitants of this great city, there are, I believe, no circumstances that conduce to it so much as the foulness of the air we are always breathing, and the anxiety and exhausting labour of mind and body that are almost inseparable from the pursuit of wealth or distinction.

Now, all these conditions, by their action on the nervous system, enfeeble respiration; and it seems probable that, as Lehmann has suggested, the formation of oxalic acid may be immediately owing to defective oxidation of those materials in the blood by which respiration is supported: but in the cases we are considering, it is not the less dependent on derangement of the general health, which is apt to recur, and which constitutes a definite object of medical treatment. In some cases, it seems, from the high specific gravity of the urine and from the large quantity of urea that co-exists with the oxalate of lime, that there is a more rapid waste of the tissues than is natural, and that the respiration is not absolutely, but only relatively defective—insufficient, that is, for the complete oxidation of the large quantity of combustible materials on which the inspired oxygen acts.

The indigestion, and the various other ailments that result from this general derangement of health, are much under control.

The remedy of most efficacy, where the urine is free from a red deposit, is the nitro-muriatic acid, which often prevents the formation of oxalic acid after a few days, lessens the flatulence and the palpitation, and makes the sleep quiet and the spirits more cheerful. From eight to twenty minims of each of the dilute acids

may be given twice-a-day in a glass of water, half an hour before breakfast and half an hour before dinner.

It was long ago known that nitric acid, or the nitric and muriatic acids, have occasionally great efficacy in indigestion; but it was Dr. Prout who rendered our knowledge on this point precise, and showed that it is in the particular form of indigestion we are considering, and in persons in whom there is a disposition to the formation of oxalate of lime in the urine, that they are especially of service.

The mineral acids have a tendency to cause a deposit of lithic acid, or of lithate of ammonia, in the urine, and when such a deposit exists, it is seldom advisable to give them longer. Dr. Prout tells us, that, when his patient lived at a distance in the country, he commonly advised him to take the acids for a month or until lithic acid or lithate of ammonia appeared in the urine.

All ailments that result from faulty assimilation and that depend primarily on peculiarity of frame or constitution, are very liable to recur. If, therefore, the mineral acids should prove of service, they may be had recourse to again and again on each occurrence of the same disorder.

If the tongue be clean, some of the light bitter tonics may be given with advantage in conjunction with the mineral acids.

When the urine from the first has a deposit of lithic acid or lithate of ammonia, the mineral acids should not be given, and the best substitute for them that I know of is the carbonate or the aromatic spirit of ammonia.

Where there is want of sleep, and great nervous irritability, and much flatulence and palpitation, the tincture of henbane, or the dilute hydrocyanic acid, or some other sedative, may be given with advantage in conjunction with either of the medicines I have just mentioned.

So much for the remedies which the Pharmacopœia supplies.

The proper regulation of the diet is equally important. Dr. Prout, considering the excessive use of sugar as one of the causes of this disorder of health, laid it down as a rule, that saccharine articles of food, and particularly *sugar*, should, as much as possible, be avoided; and that the diet should consist chiefly of animal food, and the stronger farinaceous matters.

He advises also, that the patient should abstain as much as possible from alcoholic drinks, and that, when he cannot abstain entirely, he should select in preference to others, sherry, or brandy, properly diluted with water. In some cases, however, these are too heating, and sound malt liquor, or hock, or claret, may be substituted for them.

Many years have elapsed since these injunctions were made, and the wisdom of them, as general rules, has been fully established.

It is very important, also, that the patient should change for a time his habits of life. If he is an inhabitant of a large city, and exhausts himself with mental or bodily labour, country air, rest, and recreation, are often sufficient of themselves to restore the health.—*Med. Times and Gazette, Feb.* 25, 1854, *p.* 177.

51.—ON THE REMEDIES FOR INDIGESTION.

By Dr. George Budd, F.R.S., &c.

[Dr. Budd gives us some very good hints on the different medicines used in cases of dyspepsia; and first, on the use of

Ipecacuanha.—This medicine *increases the secretions* of the stomach, and is to be taken before meals in cases of slow digestion. Daubenton was one of the first to point this out.]

Daubenton is careful in stating that the cases in which ipecacuanha is useful are where digestion is slow,—where the food lies heavy on the stomach, and there is an inability for mental or bodily exertion for some time after meals,—a kind of disorder which is, he states, especially common in men of middle age, or beyond it, who lead sedentary lives.

He believed that ipecacuanha owes its efficacy in such cases to its exciting peristaltic action in the stomach, and imparting an energy to its glands.

He recommends that it should be given in the morning fasting, and in quantity sufficient to occasion a slight feeling of vermiculating motion in the stomach, bu

without causing any sensation of pain or nausea. The quantity requisite to produce this effect varies, he says, in different persons, from a quarter of a grain to two grains. He advises, therefore, that very small doses be given at first, which may be gradually increased till a sensible effect is produced.

[Dr. Budd then gives us his own experience. He says:]

I have used ipecacuanha as a remedy for indigestion for several years, and believe that there is no other medicine we know of so effectual in removing the uneasiness and sense of oppression after meals, and the various other evils that result from slow digestion.

Small doses of rhubarb, ginger, and pepper, have a similar kind of action, and may be given singly or together for the same purpose. I generally prescribe ipecacuanha, from half a grain to a grain, in a pill, with three or four grains of rhubarb. With many, a favourite remedy for the discomfort resulting from slow digestion is a grain of cayenne pepper, with three or four grains of rhubarb. The best time for giving medicines for the purpose in question is just before dinner, and before any other meal after which a sense of oppression is usually felt.

[*Bismuth.*—This medicine is useful in *painful digestion*, accompanied with cramp or violent pain in the stomach after meals.]

It is often of signal service, as Odier remarked, in the functional disorders of the stomach that are so common in women who are ill fed and overworked, or exhausted in any other way, and especially where the stomach is very irritable, so that pain and vomiting occur soon after meals.

It is an efficient remedy when pain in the stomach, with increased secretion of gastric acid, occurs from tuberculous disease of the lung, or from some irritation elsewhere; and in infants, where this kind of disorder, with exhausting diarrhœa, results from the irritation of teething, or from improper food, or from the change of diet on weaning.

Against the pain in the stomach and vomiting, that result from simple ulcer and other forms of organic disease, it is only of use occasionally when the stomach secretes an unhealthy mucus, or when there is an excessive or untimely secretion of gastric juice.

It is of little use in the indigestion that depends on gout, and that occurs in well-fed and plethoric men.

It is of no use in the uneasiness of the stomach, of which I have before spoken, that results from slowness of digestion or a scanty secretion of gastric juice.

Bismuth, as applied to the stomach, was considered by Odier an *antispasmodic*. The action it exerts seems to be confined to the mucous membrane with which it is brought into contact, and to be a *surface* action. It retains undue secretion, and has a sedative influence on the stomach, probably by its direct action on the coats of the stomach, as well as by preventing the outpouring of irritating secretions.

It is best given, suspended in water, a short time before meals. Ten grains, three times a day, is, in most cases, an efficient dose; but it may be given, as Odier discovered, in much larger quantity, without any ill effects. It is soothing, rather than irritating, to the mucous membrane over which it passes; and, from being of such sparing solubility, has little effect elsewhere, except what it has indirectly from the action it exerts on the stomach. It has, indeed, of late, been recommended by more than one writer to be given by drachms rather than grains.

Bismuth may often be given with advantage with other medicines,—with opium, or magnesia, or chalk,—which allay pain or neutralise an excess of acid, or restrain undue secretion.

Chalk, and the *vegetable astringents*,—kino, catechu, krameria, and logwood,—are generally given to restrain diarrhœa. It does not seem to be generally known, that they are just as effectual, perhaps more effectual, in restraining undue secretion from the stomach.

Chalk, like bismuth, from its sparing solubility, has little direct action, except on the mucous membrane over which it passes. The vegetable astringents have a more remote astringent influence. This is clearly seen in the colliquative stage of phthisis; where, besides restraining the diarrhœa, and stopping the vomiting with increased secretion of gastric acid that often occurs in this state, they restrain, often in a very striking degree, the profuse sweating.

They seem all to have much the same effect. I generally give the preference to

krameria and logwood. Kino is not conveniently given in solution; and catechu is not only very nauseous, but, from being much used in the arts, is often of inferior quality. The most grateful to the taste is krameria; the most effectual, I believe, is logwood. Logwood has a mawkish taste, which is best corrected by cinnamon.

An ounce of logwood shavings, and a drachm of powdered cinnamon, may be infused for four hours in ten ounces of boiling water, and then strained. An ounce and a half of the strained infusion may be given two or three times a-day, a short time before meals.

[*Hydrocyanic acid* is also used when there is *pain* in the stomach, or *vomiting*, but must not be given when inflammation or ulceration are suspected.]

It is of most service in the gastralgia, and in the sympathetic vomiting, that occur in nervous persons from irritation elsewhere, without inflammation or ulceration of the coats of the stomach, and without undue secretion of gastric acid.

Given alone, or in conjunction with soda, it is the most effectual remedy we know of for the gastralgia that is apt to occur when the stomach is empty of food in nervous persons who have been subjected to exhausting influences; and for the vomiting that results from granular disease of the kidney.

It is of no use when pain or vomiting result from an inflammatory condition of the stomach.

It aggravates pain and vomiting when these symptoms are caused by an ulcer, or when they depend on excessive or untimely secretion of gastric acid. It often, for example, increases the vomiting that occurs in phthisis, which alkalies and the vegetable astringents will prevent.

When there is undue acidity of the stomach, it may, however, often be given with advantage in conjunction with soda or potash, when it would not be of service if given alone. The alkalies neutralise the excess of acid, and the sedative influence of the hydrocyanic acid is then exerted.

[*Alkalies* and *mineral acids* are also very useful in particular kinds of indigestion. But these are so well known that we need not here recapitulate their uses.]—*Med. Times and Gazette, April* 15, 1854, *p.* 365.

52.—*Treatment of Urticaria.* By Dr. G. Budd, F.R.S.—When nettle-rash is brought on by eating some substance in common use, and recurs frequently, the offending substance may sometimes be detected by the plan followed by Willan. He says: "I have desired several persons affected with chronic urticaria to omit first one and then another accustomed article of food or drink, and have thus been frequently able to trace the cause of the symptoms. This appeared to be very different in different persons. In some, it was malt-liquor; in others spirit, or spirit and water; in some white wine, in others vinegar; in some fruit, in others sugar; in some fish, in others unprepared vegetables. I must, however, confess, that several cases have occurred to me where a total alteration of diet did not produce the least alleviation of the complaint."

It sometimes happens that a nettle-rash resulting from defective digestion is brought on not merely by some one substance, but by several substances in common use; and it is then very difficult to detect the offending substances or to prevent the disorder by any restriction of diet to which the patient will submit.

In such cases, the disorder may sometimes be prevented by giving daily, immediately before dinner, or before breakfast and before dinner, a pill containing three or four grains of rhubarb; or what is still more effectual three or four grains of rhubarb, and from half a grain to a grain and a-half of the powder of ipecacuanha.

I several years ago learnt the occasional efficacy of rhubarb given at such times, from a lady, who told me that she was harassed by frequently recurring nettle-rash for many years, and consulted many physicians, and tried various remedies in vain, until some person who had suffered in the same way advised her to eat a few grains of rhubarb every day, just before breakfast and just before dinner. She followed the advice, and was freed from the nettle-rash. After some time she left off the rhubarb, and the nettle-rash returned. She took the rhubarb again, and the nettle-rash again disappeared. This experiment she often repeated at distant intervals, and always with the same result. When she gave me this account she had con-

tinued the practice of thus eating rhubarb for several years, with the occasional intermission of a few days, by way of experiment. She had a persuasion that if she then left off the rhubarb, the nettle-rash would recur.

Small doses of rhubarb and ipecacuanha are, as I have before observed, often of service where, from slowness of digestion, a sense of weight and oppression at the stomach is felt for some hours after meals, and seem to quicken and strengthen digestion by increasing the flow of the gastric juice.

While taking these medicines, the patient should endeavour to strengthen digestion by exercise and fresh air; should be careful not to eat too much at a time, or too often; and should live on a very simple diet—avoiding spirits, and cheese, and pastry, and undressed vegetables, and, in particular, those substances which have an especial tendency to bring on nettle-rash.

It sometimes happens, especially in women, that the nettle-rash though depending immediately on the stomach, occurs only when digestion is weakened by over-fatigue, or by anxiety or some other mental emotion, or by profuse monthly discharges, and that remedies of a different class are availing.

In some such cases, where all the means of which I have before spoken had failed, I have known the eruption disappear under the use of carbonate of ammonia, alone or in conjunction with tincture of gentian.

Serpentaria is another remedy that has obtained some repute in the treatment of this disorder, but I have never made trial of it.

I may as well observe here, that an excellent application for allaying the irritation of nettle-rash, whatever be its cause, is a lotion made by mixing ℥ss. of acetate of lead and ℥ss. of tincture of opium with ℥viij. of water.—*Medical Times and Gaz., March* 18, 1854, *p.* 258.

53.—*Treatment of Pyrosis.* By Dr. G. Budd, F.R.S.—In the treatment of water-brash, our first endeavour should, of course, be to remove the conditions that may seem to have brought it on or to maintain it.

If the disorder should seem to be caused mainly by a diet not sufficiently nutritious or consisting too much of farinaceous substances, the most effectual remedy will be a wholesome nourishing diet, containing a proper quantity of animal food *in its most digestible form.* Little permanent benefit can, indeed, be expected from medicine unless the diet is improved.

If the disorder should seem to have been induced, or to be kept up, wholly or in part, by fatigue, it is very essential that the patient should rest; if by constipation, that this condition should be removed by purgatives, such as aloes or colocynth, that do not offend the stomach.

After these points have been attended to, much further good may be done by medicines.

The medicines that have been found most useful in pyrosis are—

1st. Medicines which have an astringent action on the coats of the stomach. Among these may be classed bismuth, lime-water, and the vegetable astringents—kino, catechu, krameria, logwood.

2nd. Sedatives, especially opium and the salts of morphia, which probably also tend to restrain undue secretion by the mucous membrane, but which are chiefly of use in allaying the gastralgia that attends pyrosis.

Medicines from these two classes may often be combined with advantage. Five grains of bismuth with a twelfth of a grain of the muriate of morphia, or five grains of the compound kino powder, or an efficient dose of catechu, krameria, or logwood, with opium, may be given two or three times a-day.

3rd. Some other medicines have obtained repute in pyrosis which cannot be classed with the preceding. They have most of them an astringent action on the coats of the stomach, but act, directly or indirectly, on the nervous system as well.

The chief of these are, nitrate of silver, which may be given in pill, in doses of half-a grain three times a-day; nux vomica, which may also be given in pill, in the dose of from three to five grains, three times a-day; quinine; and the mineral acids.

Some of the medicines I have mentioned have been popular remedies for pyrosis in districts in which the malady has prevailed.

It is stated that nux vomica is a popular remedy among the Laplanders, to whom

it was recommended by Linnæus, and that lime-water was some years ago a popular remedy among the rural population of North Wales.

4th. The disorder is often connected with anemia, and steel is of great service both in removing it and in preventing its recurrence.

The medicines of which I have had most experience in disorders of this class, and which are probably as efficacious as any, are bismuth, with morphia; krameria, and logwood, with opium; and steel.—*Medical Times and Gazette, March* 18, 1854, *p.* 260.

54.—ON FERMENTATION IN THE CONTENTS OF THE STOMACH, WITH DEVELOPMENT OF SARCINÆ.

By Dr. George Budd, F.R.S.

[Sarcinæ ventriculi are peculiar bodies produced by a particular kind of fermentation, of the contents of the stomach.]

These bodies were first discovered by Mr. John Goodsir, in 1842, in a case of which he has given the following account:—

"Mr. ——, aged 19, consulted me about a stomach complaint, under which he had been labouring for four months, and which had more or less resisted every attempt made for its removal. He informed me that he considered it to be water-brash; that it attacked him on awaking in the morning with a feeling of distension of the stomach; that, without any effort of vomiting, a quantity of fluid, varying in volume from two-thirds to a whole wash-hand basinful, passed up from his stomach; that, after this he was quite relieved, and experienced no further inconvenience till the evening of the same day, when, without decided distension, sounds as of a fluid boiling or bubbling, and proceeding from the region of his stomach, were perceptible to himself and to those around him; that he slept well enough, but was generally attacked in the usual manner next morning. Such was my patient's own account of his case.

"On examining more particularly into the symptoms, I could ascertain nothing positive. His tongue and pulse were natural; he had no headache, nausea, or thirst; no tumour could be detected in the epigastrium, and no pain on pressure was complained of in the region of the stomach. The bowels were moved daily, and the stools were normal. His appetite was not affected, and the usual articles of diet appeared to agree with him. He was thin, but had a good complexion, and his flesh was firm. He stated that he had been very fat, but that this had left him before the accession of his stomach complaint. I was informed that one of his testicles had never descended beyond the groin."

The fluid thrown up from the stomach smelt, Mr. Goodsir adds, like fermenting wort, with a faint acid odour; and, after it had stood a few hours, was covered with a mass of froth, like the head of a pot of porter. The fluid itself was then moderately transparent, and of a light brown colour; and had deposited on the bottom of the basin a ropy matter of granular appearance.

Mr. Goodsir proceeded to examine the fluid under the microscope, expecting, from the signs of fermentation which the matter presented, to see some of the globular or moniliform algæ, which are the usual concomitants of certain fermentations. "What," he says, "was my astonishment then to find, in the first drop I examined, not the vegetables I was led to expect, but numerous individuals of a form with allies of which the zoologist is familiar? Drop after drop exhibited the same specific form, with a precision which convinced me that I had now to deal with an organism which, whether animal or vegetable, was closely allied to certain genera of *bacillariæ*, and much more closely to the genus *gonium* among the *volvocinæ*."

These organisms—the sarcinæ—are square or slightly oblong plates, the thickness of which is about one-eighth of the length of one of the sides. They are divided into four equal squares by lines, which join the middle points of opposite sides, and cross at right angles in the centre of the face, so as to resemble a packet bound with cords, which cross at right angles.

Each of the four secondary squares is again divided into four ternary squares, being similarly arranged but more faintly marked.

Perfect individuals vary from 800 to 1000 of an inch linear along each of their sides, and under a high power appear slightly brown or yellow.

After discovering the sarcinæ, Mr. Goodsir submitted some of the fluid to Dr. George Wilson, who made an elaborate analysis of it, and found that it contained a large quantity of acetic acid, some acid which he inferred to be the lactic, and a minute quantity of hydrochloric acid.

The patient was under Mr. Goodsir's observation nearly two months, at the end of which the disorder still continued, but was much mitigated by the remedies employed.

Soon after the observations of Mr. Goodsir were published, sarcinæ were found by Mr. Busk in three cases in quick succession.

It appears that the peculiarity of the disorder we are considering consists in this, that the secretions of the stomach, which seem to be usually more abundant than natural, undergo or excite in the food in the stomach, and after they have been thrown up from it, a fermentation which is attended with the evolution of carbonic acid, and with the production of torulæ and sarcinæ, and which leads to the formation of acetic acid.

The production of the disorder seems to require that there shall be some condition which prevents the stomach from completely or readily emptying itself.

The disorder may occur in young persons, and exist for a short time, as in one of the cases related by Mr. Busk, and in a case that has been recorded by Dr. Bence Jones, in which it was noticed a short time before death in a boy of fourteen, who died of peritonitis and granular-disease of the kidney; but it has been most frequently noticed in men who have reached middle-age,—persons more liable than any others to simple stricture and cancer of the pylorus, and to other diseases which prevent the stomach from completely emptying itself,—and in such persons the malady is usually of long duration, and may, indeed, continue to the end of life.

The appetite is generally good, but the indulgence of it is followed by flatulent distension of the stomach, attended by a sense of burning or other uneasiness, which, when an ulcer of the stomach exists, sometimes amounts to almost agonizing pain. When the disorder is slight, the heartburn or uneasiness at the stomach continues for some hours, and then gradually subsides, as—in one way and another, by the absorption and discharge of its contents—the stomach gets empty. When the disorder is in higher degree the uneasiness persists until it is relieved by the vomiting or eructation of a clear, sour, fermenting liquid. The quantity of this liquid ejected at once varies in different cases and at different times; and when an obstruction at the pyloric orifice has long existed, and the stomach has become much enlarged, sometimes amounts to two quarts or more. When much is thrown up from the stomach, the bowels, as in ordinary cases of stricture of the pylorus, are usually costive. There is, in most cases, complete absence of fever, but sleep is often much disturbed by the distension and uneasiness of the stomach, which, as they result from eating, are more distressing in the evening and at night than at earlier parts of the day.

The disorder of digestion, the pain, the disturbance of sleep, cause loss of flesh, and, after the malady has lasted long in high degree, the patient is usually emaciated, has a dry skin, a slow pulse, and the look of a person with serious organic disease of the stomach. The disorder is readily recognized when it is in such degree as to cause vomiting, by the circumstance, that the matter thrown up from the stomach ferments, and that both the foam which collects on its surface, and the sediment it throws down, contain abundance of sarcinæ and torulæ.

It would seem, from the evolution of carbonic acid, from the development of torulæ, and from the fact that alcohol was detected by Professor Graham in the matter vomited in a case of this kind, that common alcoholic fermentation is the first step in the process of transformation; but the alcoholic appears to be rapidly transformed, and the process ends in the production of a large quantity of acetic acid. No symptoms of intoxication have been noticed in cases of this kind.

As the production of acetic acid from alcohol requires a large quantity of oxygen, there can be little doubt that where, as in the analysis published by Mr. Goodsir, a very large quantity of acetic acid has been found in the matter vomited, much of this acetic acid has been formed after the matter has been ejected from the stomach. We know that fermentation goes on actively in the matter ejected, and the conditions for the acetification of alcohol would seem to be much more favourable when the mat-

ter is exposed to the air than when it is shut up, excluded from the direct influence of the air, in the body.

It must not be supposed, however, that this peculiar fermentation constitutes the whole disease. The disease consists primarily and essentially of some organic change which prevents the stomach from completely or readily emptying itself, and which causes a secretion from the coats of the stomach, which, when mixed with the food, is prone to undergo or to excite the fermentative process in question. The fermentation may be stopped for a time; the matter thrown up from the stomach may be alkaline, and contain no sarcinæ, as happened to one case during his stay in the hospital; but the patient, instead of being then well, has the more common kind of disorder which an impediment to the emptying of the stomach causes. The question then arises,—How is it that an impediment to the emptying of the stomach leads to this kind of fermentation in some cases and not in others? Is there any peculiarity in the organic change in the particular cases in which the fermentation occurs? It is curious that, in two of the cases related by Mr. Busk, the disorder resulted from hernia of the stomach through the diaphragm, the coats of the stomach itself being sound.

The development of the sarcinæ has probably the same relation to the fermentative process, or to some stage of the fermentative process, as the development of torulæ has to simple alcoholic fermentation. It is worthy of note that sarcinæ are not peculiar to the stomach. They have been found in other animal secretions in a state of decomposition. In a review of Lehmann's 'Physiological Chemistry,' in the 'British and Foreign Medico-Chirurgical Review' for 1851, it is stated, that sarcinæ have been once detected in the urine by Heller; and Dr. Beale tells me that he has discovered them once in urine and once in decomposing bile.

But, although the development of torulæ and sarcinæ cannot be considered the primary cause of the stomach disorder, the fermentation that attends it, by leading to the evolution of gas, and the formation of acetic acid, and thus distending and fretting the stomach, terribly aggravates the sufferings which the impediment to the emptying of the stomach, which is the origin of the mischief, would otherwise produce.

The heartburn and uneasiness of the stomach may be lessened, by neutralising the excess of acid by carbonate of soda or some other alkali; but the readiest, perhaps, in most cases, the chief means we have of relieving the disorder, are the agents which tend to prevent the fermentative process. The fermentative process may be checked by creosote, which has a remarkable influence in checking fermentation of various kinds, and which was given with benefit in three of the cases noticed above, and in several others, of which accounts have been published in the medical journals Small doses—a minim or half a minim—in the form of pill, might prove sufficient if taken, as it should be, at every meal.

If we may judge by one of the cases, the fermentation may also be checked, and the disorder, in some, be much mitigated by large quantities of common salt.

A more effectual remedy still is, perhaps, the bisulphite of soda, which is powerfully antiseptic, and has been, of late years, much used in some anatomical schools, to preserve bodies for dissection. It has also been used to prevent the fermentation of vegetable juices. It owes its virtues to the circumstances, that it is decomposed by almost any vegetable acid, and that its decomposition liberates sulphurous acid, which has great power to prevent alcoholic and acetous fermentation.

The merit of suggesting it as a remedy for the disorder we are considering, belongs, I believe, to Dr. Jenner, who gave it with much success in the case to which I have before referred. I have myself tried it with much benefit in several cases in which the symptoms were like those that attended the vomiting of sarcinæ. From 3ss. to 3j. of it may be given, dissolved in water, two or three times a-day; and probably, with proper care as to the time of giving it, smaller doses would prove sufficient. There are, perhaps, many other agents having power to prevent fermentation, that might prove beneficial in the same way.

In chronic cases of the disorder, the drain from the coats of the stomach, and the frequent throwing up of part of its contents, causes constipation; and it is requisite to obviate this condition, since any undue accumulation in the bowels aggravates the stomach-disorder. The best aperients are probably aloetic or colocynth pills.

When the disorder is severe, and the patient reduced in flesh, opiates, timely ad-

ministered, are of much service in lessening the uneasiness at the stomach, and promoting sleep.

It now and then happens, that the disorder co-exists with chronic ulcer of the stomach, and that eating solid food causes *pain* in the stomach, which is different from the uneasiness that results from distension of the stomach, and pain also in the corresponding part of the back. In such cases, as in ordinary cases of simple ulcer, the diet should be of the least irritating kind.

By the various means which I have now enumerated, the disorder may be greatly mitigated, the strength of the patient kept up, and his life prolonged: which is as much as can be promised for any disorder which originates, as this usually does, in irremovable organic changes.—*Medical Times and Gazette, Feb.* 11, 1854, *p.* 125.

55.—*A Case Illustrative of the Habitat of the Sarcina Ventriculi, and of Cardiac Murmur without Valvular Disease.*—By Dr. T. K. CHAMBERS (before the Harveian Society).—He said they had at St. Mary's Hospital lately an opportunity of seeing, *in situ*, the appearance called "sarcinæ ventriculi," of which he did not think an instance in the human subject had been published:—E. A. S., a girl, aged thirteen, was a patient of his in Victoria ward from August 15th to her decease, November 23rd, 1853. Her chief malady, and the cause of her death, was great enlargement of the heart, the consequence of pericarditis following slight rheumatism. This presented some points of interest peculiar to itself, to be hereinafter mentioned. But in addition to the usual inconvenience thence arising, she suffered during the last two months of her life from pain in the pit of the stomach and frequent vomiting. Temporary relief was afforded by drachm doses of hyposulphite of soda, and at another time by leaving off all food, except a mixture of equal parts of milk and lime-water. The latter treatment seemed to give most relief, but could not be long continued or often repeated for fear of starvation. The vomit was usually acid, and consisted of food mixed with saliva and mucus; sometimes it resembled yeast. No sarcinæ could be found in it. After death there were found—1, some clotted blood in the œsophagus; 2, external congestion of the stomach; 3, in the interior of the stomach a quantity (unmeasured) of sepia brown substance, partially attached in small flakes to the mucous membrane by a tenacious mucus, superficially transparent, but near the membrane whitish. The microscopic examination of the mucus presented an external layer formed by the above-named flakes, seen as yellow granular masses, a few broken starch cells, and a great number of sarcinæ ventriculi adhering together in masses, together with a few large granular nucleated cells (? stomach cells). The whitish portion of the mucus contained only the large nucleated cells, nuclei, cylinder epithelium, and granular matter, but no sarcinæ. A transverse section of the membrane showed the tubular structure to be perfectly healthy, and filled with nuclei and granular matter. Throughout the stomach the sarcinæ were found only in the superficial layer of the mucus, and not at all in the deeper one, and were always mixed with some starch-globules and other apparent debris of food. Might not the tenacity of the mucus equally spread over the membrane explain the reason why it was not rejected by vomiting?—and was not this tenacity likely to be one of the circumstances under which the organic-like forms called sarcinæ were produced? By this tenacity the semi-digested particles of food were retained an unnaturally long time in the stomach, and preserved from the action of the gastric juice perhaps for many days. What was more likely than that the cellular forms of vegetable life should find here a habitat such as was not elsewhere met with, and that we should find here plants (if we like to call them plants) which were not seen in other situations?

Another peculiarity worthy of note in this case was the existence of a very loud and distinct murmur with the first sound of the heart, most markedly clear at the point of impulse, and for two inches upwards, accompanied by a very decided increase in the flap-sound of the pulmonary valves. The physiological arguments for attaching this latter sign to regurgitation through the mitral valve, as given by Professor Skoda, were so rational, that he (Dr. Chambers) ventured to adopt it without the test of a crucial experiment, as an evidence that the duty of the mitral valves was imperfectly performed. Further proof of excessive impediment to the circula-

tion was afforded during life by anasarca, albuminuria without diseased kidneys, lividity of face, and asphyxia; after death, by patches of sanguineous effusion in the substance of the lungs, and the engorgement of all the viscera with blood. Yet, on inspection of the heart, it was found healthy throughout, as far as its valvular apparatus and form was concerned. The mitral valves were artificially put together, shut perfectly, and the tricuspids as close as usual. The diameter of the pulmonary artery was one inch, that of the aorta, 0·75, which we should suppose was the natural proportion. The form, as he had said, was healthy, yet the organ was of enormous size, weighing no less than fourteen ounces and a half, hypertrophied and dilated in harmonious proportion, so as to be a proper heart for a gigantic man, instead of a little girl. The pericardium was pretty generally adherent inside, and in front was adherent also to the thoracic walls. What was the cause of the systolic murmur? Was it that the adhesion of the heart to the pericardium, and of that to the chest, dragged open the valve when the ventricle contracted? Such was one rational explanation in this case. But to weigh against it, he found in the St. George's Hospital fatal case-book (year 1850, folio 188), a case of a man, aged thirty-four, who died of dropsy, with degenerated liver and kidneys. Here there was a very loud mitral regurgitant murmur, and the heart was found, as in the case of E. A. S., hypertrophied, dilated, and free from valvular disease, but differing in that there were no pericardial adhesions. The crucial observation, therefore, failed to establish the most obvious explanation.—*Lancet, Feb.* 11, 1854, *p.* 157.

56.—CASE OF SARCINA VENTRICULI ASSOCIATED WITH FATTY DEGENERATION OF THE LIVER.

By Dr. Robert Barnes.

[This case is related from the necessity of proving how far this parasite may be regarded as essential, or merely incidental, to other morbid conditions in this disease.]

A lady of about sixty years of age had been addicted for many years to the free use of opium in different forms. For a long time together she consumed daily half an ounce of Battley's solution, and probably often more. She was stout, and of adipose disposition, but accustomed to exercise in the open air. Her anxiety for fresh air sometimes amounted to an uncontrollable longing; her appetite was usually good; her diet consisted generally of well-seasoned dishes—at night, of bread and milk. She suffered at intervals from "bilious attacks," which were relieved by vomiting. Of late years she had had one or two attacks in the year of an alarming character; spasms, attended by great pain in the stomach, prostration, numbness, and approach to paralysis of the right side of the body. At these times the power of speech was commonly impaired. These attacks—so severe as apparently to threaten a speedy fatal termination—gave way under the use of large doses of opium and ether. I have ordered her sometimes three grains of morphia at a dose. This was usually followed by warmth of surface, remission of pain, a rising of the pulse, a general sensation of improvement, and sleep. After this action the symptoms would abate, and under bitter stimulating tonics she would recover her usual strength. In the autumn of 1852 this lady went to Jersey, where she had a severe illness, marked by pain in the right side, for which leeches and blisters were resorted to. The cause of her illness was represented to be inflammation of the liver. My acquaintance with her previous history, and subsequent opportunities lead me to doubt the correctness of this view of the case. At any rate this illness would appear to have been much more protracted and grave than any she had previously suffered. It left her weak, with her appetite impaired; she never recovered her ordinary health.

Throughout March, 1853, she underwent excessive anxiety and fatigue owing to the illness of her husband, which terminated fatally. On the 8th of April she complained of spasms, pain in the stomach, and loss of appetite. These symptoms increased, and on the 14th the cramps and pain were intensely aggravated, and violent vomiting set in, with great mental depression. Hydrocyanic acid, ice, soda-water, blisters to the pit of the stomach, dressed with morphia, had no alleviating effect. *No sleep*; pulse not quick, but full; tongue white, furred; bowels not costive;

urine high-coloured. The vomited matter was at first light-coloured, containing milk, and such similar bland articles of food as she could still take. It gradually became greener; and no food but an occasional spoonful of beef-tea could be swallowed. When the vomited matter was allowed to stand, a green matter subsided, forming a thick stratum. On examination this green matter was found to consist almost entirely of sarcinæ. Sulphite of soda was now administered in scruple doses every four hours. After thirty-six hours' use, the vomiting had abated, the last vomitings exhibiting less of the green sediment. The pain remained of the most agonizing intensity. The expression of suffering exhibited in the countenance was afflicting to witness. She begged for chloroform as an escape from her torture. The quantity of sulphite was diminished, and a mixture of infusion of quassia, bi-carbonate of potassa, and tincture of orange was added. The symptoms remitted somewhat, but the prostration increased. Breathing was distressing; she could not fill the chest, but respiration was heard in every part; the pulse was intermitting, especially after any exertion, such as sitting up in bed. Pressure below right ribs gave pain. There was no swelling of the feet or abdomen. A blister was applied to the right hypochondrium; ten grains of calomel, followed by an enema. On the 18th, Dr. Hassall saw the case with me. The symptoms were as detailed. The treatment was persisted in. On the 19th, the quassia mixture seemed to compose and give relief, so much so, that it was supposed by the patient and her attendants to contain a narcotic. The appetite was somewhat improved; she took a little beef-tea. Some urine passed, and the bowels acted freely. On the 20th the distress of breathing increased; the anxiety of countenance and of manner returned. She begged for chloroform with increasing earnestness. This was administered occasionally, and was the only means by which even a temporary mitigation of suffering could be procured. The remittent character of the pulse increased; jaundice appeared; the tongue was not furred, but glazed. The treatment was continued. On the 21st she was much worse; she had vomited several times in the night; the green matter was again visible; tympanitis and some effusion in the abdomen. On the 22nd, at eight p.m., she sank. Her dissolution was preceded by a return of copious vomiting. The suffering at the stomach, and the distress of breathing and the jaundice gradually became more intense.

Autopsy on the 24th. The examination was limited to the stomach, liver, and intestines. A considerable layer of fat in the walls of the abdomen; the omentum was also very fat. The stomach was full of turbid green matter similar to that which had been so abundantly vomited just before death; some of the same fluid was also found in the duodenum. The mucous membrane of the stomach exhibited a punctate injection, which was a little more marked towards the pylorus. The pylorus was not contracted to a sensible degree; the valvular ridge, although it felt slightly thicker than natural, was composed of nothing but normal tissues—muscular fibres and mucous membrane. The utmost that could be said was, that there was slight hypertrophy of the structures forming the valve. There was some clear fluid in the peritoneum. The peritoneal covering of the liver was free from any mark of inflammation or adhesions; it was not enlarged or contracted; the colour was pale, the aspect like that of a nutmeg; an incised surface presented a similar appearance; the texture was soft and lacerable. On a microscopic examination, scarcely a vestige of liver that could be supposed to be in a condition to fulfil its normal function could be found. It might be said with truth, that the hepatic cells in every part were full of oil. It is undoubtedly a matter for regret that circumstances prevented a more extended examination, embracing the heart, lungs, and kidneys. A careful investigation of the chest during life leads me to believe that the lungs were healthy. The urine had given no indication of granular disease of the kidney. It is not, however, improbable that there was some amount of fatty degeneration of the heart.

Confining our attention to the facts we possess, to what cause can we attribute the development of the sarcina in this case? We may fairly conclude that the sarcina did not constitute the essential morbid condition. That the administration of sulphite of soda, alkalies, and quassia was attended by a marked, although temporary mitigation of the symptoms coinciding with a diminution in the quantity of the sarcina, is true. But the parasite has now been so frequently observed in connexion with an abiding organic disease that we can hardly avoid the conclusion that

it is an accidental and a secondary result. The most obvious disease in the case related was the fatty conversion of the liver. This had certainly existed for a long period; and it is surprising that such extensive alteration of structure had not long before proved fatal. The slightly hypertrophied condition of the structures forming the pyloric orifice was scarcely sufficient to support the opinion of Dr. Todd, that retardation of the food in the stomach was the occasion of the development of the sarcina. The thickening observed produced no sensible contraction; nor was it observed that the stomach was unusually large.

A sufficient number of cases now exists to show, at least, this much, that the sarcina may be developed in the stomach under a variety of circumstances. Examination of the cases recorded will also, I think, render it doubtful whether any patient in whom the sarcina has been observed has ever been fairly cured. So much of the disease as might be supposed to depend upon the presence of sarcina may, indeed, appear to have been removed under the use of sulphite of soda and other treatment. But the persistence or return of certain distressing symptoms points to the conclusion that there existed some other disease. The opinion of Schlossberger, that the appearance of sarcina is invariably an epiphenomenon, is probably correct. In every instance where the opportunity has been afforded of examining the body after death, some organic disease has been found. Thus, in Dr. Bence Jones' case, there was Bright's disease and peritonitis, but no disease of the stomach or intestines. Of three fatal cases recorded by Dr. Ransome, one exhibited granular kidneys: the stomach was enormously dilated, and around the pylorus was a dense mass of fibrous tissue which had narrowed the orifice to the size of a quill. Another showed also enlargement of the stomach; and the pylorus contracted to the size of a quill, was fixed to the liver by old and dense adhesions. There was an ulcer of the stomach. The liver was apparently healthy. In Dr. Ransome's third case, the patient died after perforation of the stomach by an ulcer. The liver was affected with medullary cancer, and was adherent to the pylorus. The pyloric orifice was large enough to admit the little finger.

I am inclined to conjecture that *any cause* capable of inducing obstinate vomiting may, in the end, lead to the formation of sarcina, provided the necessary acid condition of the secretions of the stomach be present. The observations of Andral, Dr. Hassall, and others, clearly establish that the yeast-plant and the penicilium glaucum are apt to be developed in acid fluids containing organic matter. Dr. Neale has found both these parasitic productions present in vomited matter containing sarcina. It seems not unreasonable to suppose that the sarcina which is always found in acid fluids is as much an accidental formation as the yeast-plant and the penicilium glaucum—that this, the sarcina, like the yeast-plant and penicilium, is a symptom and indication of some pre-existing disease.

Another question is suggested by the present case. May not the vomited matter in some cases described as cases of "æruginous vomiting" have owed its green colour to the presence of sarcina? In many cases of green vomiting the colour is undoubtedly due to the presence of bile. In the case I have related, the general appearance of the vomited matter might well have justified the appellation of æruginous. Chemical tests afford the readiest means of manifesting the presence of bile: the microscope alone can afford satisfactory evidence of sarcina. In every case of green vomiting both methods of analysis should be employed.

Whether we regard the sarcina as an accident, as a mere symptom, or as an essential disease, the discovery of its occurrence in connexion with distressing symptoms which admit of more or less complete relief by the aid of agents destructive to the sarcina, must be admitted to be a valuable fact added to the stores of medical knowledge. The relation between this vegetable parasite and organic diseases furnishes one of the most interesting pathological problems. Facts are not yet numerous enough for its solution. But the diligent microscopical and chemical investigation of the vomited matters in a large number of cases, varying in their circumstances, cannot fail to be attended with success.—*Lancet, Jan.* 7, 1854, *p.* 3.

57.—ON FATTY LIVER.

By Dr. H. Bamberger.

Pathological Anatomy.—The anatomical characters of fatty liver in an extreme case are: Increase in bulk of the organ with expansion of the surface; flattening and thickening of its borders; smooth, glistening, transparent, and tightly-stretched peritoneal covering; a doughy feel; without and within a continuous yellowish red or pale yellowish white colour; contents of the consistence of tallow, which clings to the blade of a dry and somewhat warmed knife. A variety of the preceding is the waxy liver, which differs in presenting a deeper colour, like yellow wax, greater consistence, and a dry fracture: it is characterised by a peculiar modification of the infiltrated fat. Under the microscope there are usually seen greatly enlarged hepatic gland-cells filled with oil-globules of every size, often to that extent that the nucleus is no longer visible. Also between the cells free fat, in the form of drops, is effused. Sometimes there may be observed the peculiar radiating crystals of margarin. Of the chemical conditions of the bile in this form of disease nothing certain is known. Its visible characters do not differ materially from the normal; according to Frerichs, it is always poor in fatty matter; according to Lehmann, it sometimes contains albumen.

Etiology.—The fatty metamorphosis of the organic parenchyma cells is one of the most important morbid changes to which this organ is subject. According to Reinhardt, fat molecules may be deposited, under circumstances, in all cells supplied with albuminous contents; according to Virchow, cells of a certain age contain granular fat, whose appearance usually precedes their spontaneous destruction; certain anomalies of nutrition, either of excess or deficiency, favour this degeneration, which occurs from the metamorphosis of the actual contents of the cell. In most cases of fatty liver, however, the fat does not appear to originate in the interior of the cell, but to be absorbed from without, namely, from the blood,—and to become infiltrated into the cells. This view finds support from an observation of Gulliver, that those parts which have become most diseased lie about the ramification of the portal vein; also from the experiments of Majendie, Gluge, &c., who produced fatty liver artificially by injecting fluid fat into the blood; also by the observations of Gluge and Thiernesse, that fatty liver may easily ensue from habitual indulgence in fatty food.

Upon the bio-chemical antecedents of this disease nothing very certain is known; but there are many conditions which favour its development. For example, want of bodily exercise; indulgence in food containing fat, or easily changed into that substance; excess in spirits, especially brandy. Under circumstances of health, the greater part of the fat obtained from the chyme enters the thoracic duct to be conveyed to the right cavities of the heart, thence to be carried to the lungs, where it serves as a material for respiration. Part of the fat probably goes by the portal vein to the liver, here to be used in the formation of the bile, a fluid abounding in carbon; so that, in the normal state, there is no excess of fat, which can become infiltrated into the hepatic gland cells. Under the circumstances of fatty disease, it appears that, either from positive excess of fat in the portal vein, or from deficient action of the lungs, or most probably from both causes combined, so much fat is accumulated in the liver, that, after the formation of the bile, the rest becomes infiltrated in the gland-cells in a molecular form. Very often fatty liver is found as an accompaniment to tuberculosis, and also, according to the author, to chronic complaints of different organs; so that he comes to the conclusion, that every protracted disease, especially when it affects respiration, favours the occurrence of fatty degeneration. Moreover, infiltration of fat accompanies the most opposite forms of chronic liver disease,—namely, nutmeg liver, cirrhosis, and cancer. Fatty liver does not occur in infancy or childhood; it is commoner among women than among men.

Symptomatology and Diagnosis.—The slighter degrees of fatty liver give rise to such trivial symptoms as not to need notice here. But even the higher forms usually produce no suffering, or such slight inconvenience as not to be associated with the real seat of disease. A patient usually feels a weight in the right hypochondrium, especially when he lies on the left side. Severe pain only ensues when the formation of fat is very rapid, and then it arises in all probability from stretching of the serous investment. There are disturbances in the digestive organs, usually attributed

to other causes. In spite of this absence of strongly-marked symptoms, the diagnosis of fatty liver is, in its advanced stages, not difficult in the greater number of cases. In individuals whose mode of life favours the production of fatty liver, in those suffering from chronic diseases, especially tuberculosis of the lungs, the physician will rarely err in forming this diagnosis, when he detects an increase in the volume of the organ, both by the hand and by percussion, while there is neither pain, nor icterus, nor ascites, nor enlargement of the spleen.

As regards prognosis in its earlier stages, the disease is of secondary importance, and not likely to demand much attention. In its advanced stages it is important as connected with similar changes in other parts of the organism. The treatment can only be laid down as regards that variety of the disease which is a consequence of inactive life and luxurious habits. Such articles of food as cannot be converted into fat should be recommended, such as lean meat, green vegetables, fruits. Spirituous drinks, too much sleep, fatty kinds of meat, &c., starch meal, and sugary substances, must be forbidden; bodily exercise and mental activity must be insisted on. Alkaline waters may be administered; also the neutral salts. In tuberculosis and chronic diseases of important organs the fatty liver is but an indication of more important changes elsewhere, and requires no particular treatment.—*Med. Times and Gazette, Oct.* 29, 1853, *p.* 458.

58.—*State of the Liver in Jaundice.* By Dr. Handfield Jones, F.R.S.—[From the history of several cases, the conclusions Dr. Jones arrives at are as follow:]

1. That interference with the out-flow of bile into the intestine causes dilatation, chiefly of the gall-bladder and larger ducts, and not at all of the smallest.

2. That this arrest of the bile-flow tends to produce local or general jaundice of the liver itself, but does not do so necessarily, or at least not for some time.

3. That local jaundice of the liver in spots, and general jaundice, as in acute yellow atrophy affecting the whole organ, may be produced without any such obstruction.

4. That any considerable accumulation of yellow pigment in the hepatic cells may be chiefly, if not entirely, dependent on vascular congestion long protracted, the exuding hæmatine undergoing changes in the liver similar to those seen when it exudes in other parts.

5. That from the comparatively small number of the coloured spots, and their often wide separation in cases of local hepatic jaundice, there seems reason to conclude, that derangement of the action of the ultimate ducts is materially concerned in their production. If this were not so, the spots ought to occur at every point where a duct terminates, as the backward pressure must tell on all alike.—*Med. Times and Gazette, Nov.* 26, 1853, *p.* 564.

59.—CASE OF DIARRHŒA ADIPOSA, WITH OBSERVATIONS.

By Jeffrey A. Marston, Esq., Newcastle.

B. R, aged 35, labourer, of bilious temperament and middle stature, with a fatty frame, but a very sallow and emaciated face—came under treatment, November, 1852. He complained chiefly of general debility, and a dull pain, accompanied by a creeping sensation, as if of a live animal, along the inferior part of the epigastrium to left side, and round the back to the right hypochondrium. He had also frequent purging of large quantities of a very peculiar fatty-looking substance, but in the intervals his bowels were rather sluggish, when purgatives and mercurials appeared to give him some relief, but always augmented the discharge of this fatty matter. Some time back he had suffered from a dull aching pain in the right hypochondrium and back, extending upwards occasionally to the right shoulder. These symptoms had been gradually coming on for ten or eleven months, without apparent cause. The respiration was slow and passive, but no pulmonary disease could be detected. Heart's action was feeble, and impulse scarcely perceptible, yet no organic lesion was present, nor had he experienced dyspnœa or palpitation. There was no tenderness, swelling, or tumour anywhere, except a slight enlargement of the liver. His appetite was good, and he had a great desire for saccharine matters, fat meat, and hydro-carbons gene-

rally. Urine was passed in abnormal quantity, pale in colour, with very slight reaction on litmus: sp. gr. 1·030: under the microscope it presented a few epithelial scales, and a number of oil globules; on evaporating a portion and treating it with ether, these globules were dissolved;—there was less than a normal amount of urea and lithic acid, and no albumen; but Trommer's test, yeast, and oxide of silver indicated the presence of sugar, and the skin was harsh and dry, though he did not complain at all of these diabetic symptoms, *all* of which disappeared some time before death. Tongue was slightly furred; gums and inside of lips were pale and flabby; pulse 100, but it varied during treatment from 90 to 120. No cancer, phthisis, or cardiac affection could be traced in any of his family, which had been generally healthy.

The matters passed from the bowels presented a very fatty, tenacious, and peculiarly slimy appearance, deficient in bile, and altogether different from fæces; on raising a portion on the point of a knife it appeared in greasy masses; under the microscope numerous epithelial scales, with mucus, and a substance laden with oil globules, in every respect similar to fat, were observed: their fatty nature was rendered more evident by their being soluble in ether, and with liq. potassæ forming a semi-opaque gelatinous mass exactly resembling soft soap.

Now the questions as to the *origo mali* in this case were—Was the liver affected with chronic inflammation or enlarged by engorgement? Did the fault rest with the stomach, pancreas, or kidneys, or was it a case of mal-assimilation and degeneration of the tissues generally? I confess it baffled my attempts at diagnosis. He had already been under medical treatment for the last six or eight months, during which he had taken mercury and opium, been leeched, blistered, &c., without marked benefit. I advised that he should abstain from farinaceous and saccharine articles of food. Diaphoretics succeeded, though with difficulty, in producing diaphoresis; the sweat had no acid reaction on litmus. Olive oil, instead of being beneficial, only increased the discharge of fatty matter, and deranged the stomach. Purgatives, mercurials, counter-irritants, with small doses of iodide of potassium and ung. iodin. to region of liver, and a variety of other remedies failing to produce relief, at last all medical treatment was discontinued. His appetite continued good, but the adipose diarrhœa (four or five stools per diem upon the average) continuing, he gradually sank, and died apparently from asthenia, after having been under medical treatment altogether thirteen or fourteen months. Towards the last he was ordered porter and beef-tea, with opium, to support his strength, and relieve irritability. The urine was examined from time to time, and the quantity of sugar was found gradually to decrease, and ultimately to disappear altogether: but there were still present the oil globules and fatty epithelium. I fancied that the symptoms were somewhat mitigated by careful abstinence from farinaceous articles of diet.

In consequence of the patient's residing at a distance of six miles, I could not watch the case so closely as I desired.

Post-Mortem Examination.—General appearance of the body sallow and emaciated; face, tongue, and lips, flabby and anemic.

Head.—Brain and its membranes healthy, and no abnormal effusion into ventricles.

Thorax.—Old pleuritic adhesions on both sides. Lungs gave a healthy crepitus, contained no tubercles, but were somewhat doughy and greasy to the feel; pericardium quite healthy; heart dilated and flabby; walls of ventricles collapsing, and becoming perfectly flat, and though not presenting the true fatty degeneration of the sacral elements, yet there was a deposition of fat intimately amid its muscular fibres.

Abdomen.—No adhesion of peritoneum; the sub-peritoneal fat was abundant. Liver slightly enlarged, and presented the fatty greasy structure of a phthisical subject. Gall bladder full; ducts quite patent. Kidneys, particularly the left, enlarged and fatty. Duodenum quite healthy, but the head of pancreas appeared to be converted into a hard schirrhoid tumour, which did not press upon the ductus communis choledochus, as in most of the similar recorded cases, whilst the body and other parts of the gland were atrophied, and its duct was found perfectly obliterated and degenerated into an impervious cord. This state of the pancreas was, I presume, the most important of the post-mortem appearances. The examination might have been performed more minutely, but for the prejudices of the friends.

Observations.—This case is a peculiar one. Its physiological bearing is very important, particularly at the present time, when many of our leading organic chemists

and physiologists are debating upon the function of the pancreas. It is a matter of great difficulty to reconcile the conflicting statements made regarding the glandular system generally, and much of the discrepancy and difficulty appears in some measure to have arisen, from physiologists having pursued a too systematic and material course of reasoning. There can be no doubt that the rapid strides which organic chemistry has recently made, have opened to us a wider field of investigation, and thrown great light upon many obscure points, yet there can be no question also, that the functions of the animal machine, guided and ruled by vital forces, differ materially from the laboratory of the chemist. That the pancreas does exert an important influence in the animal economy is obvious from its size, situation, and permanent duct. Observing the stages of development of this organ in different animals, we notice that it is much larger in herbivora than in carnivora, and that there is a correspondence (amid the latter class), between the development of the organ on the one hand, and the ingestion of fatty material on the other. In its minute anatomy it is almost identical with the salivary glands, and its secretion resembles very closely the saliva; according to Leuret and Lessaigne, its fluid has an alkaline reaction. From the experiments of Bouchardat and Sandras, made upon birds, it appears that the pancreatic juice exerts a specific influence upon starch granules, dissolving them; and if albumen be present in the secretion, as is generally stated by physiologists (but denied by Blondlot), then there can be no doubt that its action upon amylaceous matters is analogous to that of the saliva, in dissolving them and producing therefrom dextrine and grape sugar; but these experiments left open the question whether the pancreatic secretion, or the secretion of the duodenal mucous membrane, had the greater share in the function. It appears to be generally settled that the digestion of amylaceous matters is accomplished by the action of the salivary and pancreatic secretions, and it is probable that the unassimilated portion of this form of non-azotized food passing on through the small intestines, gives rise to the lactic and acetic acid fermentation in the cœcum, which, according to Blondlot, is there produced by the decomposition of the non-azotized ingredients of food. Tiedemann and Gmelin have also proved that the contents of the cœcum are highly acid, even in animals that consume no food capable of undergoing the lactic or acetic acid fermentation; hence they concluded that the secretion of the intestine is itself acid. This may be so, but from the great development of the cœcum in the herbivora, we may, I conceive, fairly deduce (in the absence of experiment) that the acid of that intestine does, in some degree at least, depend upon the decomposition of the amylaceous ingesta; for from the experiments of Bernard, Professor Thomson and Plattner, the bile does not prevent either the formation of sugar, or its conversion into lactic or acetic acids. It appears, then, that some of the sugar produced by the action of the salivary and pancreatic glands does undergo the lactic or acetic acid fermentation in the cœcum, particularly as there is generally a corresponding amount of development between the former organ and that intestine. As regards the other part of the sugar existing in the duodenum, it would appear, from H. Meckel's experiments, that it is converted into fat by the action of the bile; for he found that bile, acting upon grape sugar with the aid of a gentle heat, converts it into fat.

Thus far the function of the pancreas, in primarily preparing amylaceous matters for assimilation and secondary decomposition, appears pretty plain; but it has long been presumed that the pancreatic juice exercises some influence upon the digestion of fatty ingesta, and it has been generally stated, that its action on fatty matter gives rise to a minute division and suspension of its molecules, something analogous to an emulsion; and Bernard goes farther than this, and asserts that its direct function is to separate fatty ingesta into their proximate elements, as butyric acid, &c., and glycerine.

Mialhe, adopting Bernard's views, explains its action upon the principle of fermentation. More recently another set of physiologists, of whom Frerichs and Lenz appear to be the most prominent, have published a series of experiments to prove that its absence in the intestine does not prevent the digestion and assimilation of fat. They experimented upon cats, and found the usual amount of fatty matter in the chyle, after ligature of the pancreatic duct. Here, then, exists a division between two leading sets of physiologists; for Bernard still adheres to his views. The question comes, does this case in any way fill up the gap? It has been advanced by Bou-

chardat and Sandras that the free alkali of the juice, or serum of the blood, would be sufficient to dissolve the fat; and adopting Plattner's theory, the soda of the bile may be almost vicarious of the action of the pancreatic juice, in separating the fatty ingesta by saponification with its acids; but whether this could continue long is not evident, and what appears to be the real root of the question is, whether, under long continuance, this would not be incompatible with existence. In the case before us, it is possible that the choleate of soda of the bile, and the alkalies of the serum did supply an alkali to the fat, thus saponifying it, and that the choleic acid, if Plattner's views be correct, taking albumen as its base, the resulting compound, which is the product of so highly an organized gland as the liver, on the one hand, and the chemical and antiseptic action of the gastric secretion, which is, doubtless, itself not a mere chemical combination, but a definite semi-organized material, on the other, might give rise to the fatty albuminous molecular base of the chyle; but that this continuing, these alkalies were not only insufficient in quantity to the digestion of the fatty ingesta, but an imperfectly organized material was formed, from which an imperfect chyle resulted.

The presence of sugar in the urine in this case is difficult of explanation; but be it remarked that this was a transitory symptom, existing most when the patient partook largely of amylaceous matters, which are easily capable of being resolved into sugar, and ultimately ceasing long prior to death. It might be that a larger than normal amount of fatty matter was presented to and absorbed by the tributary branches of the vena porta, and that through the immediate action of the liver (if Bernard's views be correct) this was resolved into sugar and carried by the hepatic vein into the general circulation; and, being more than normal in quantity, did not altogether undergo decomposition in the lungs (as it is conceived to do), but was excreted by the kidneys. Again, the deposit of fatty matter in the viscera generally may admit of a similar explanation; for I apprehend we must regard the fatty degeneration of the liver not as a primary affection, but as a secondary disease, resulting from the actual deposition of fat from the blood, it being found in a similar condition in almost all diseases, attended by much emaciation. Perhaps the fatty ingesta in this case, not having been subjected to the vital and chemical action of the pancreatic secretion, had never reached a sufficiently organized state to undergo the necessary changes, prior to assimilation or secondary combustion.

Looking at the case in all its bearings, it certainly appears to support Bernard's views, which I cannot consider entirely overthrown by the experiments before quoted. We may, I apprehend, fairly conclude from this case that the pancreas does aid in the digestion of starchy matters, and that it does in some way prepare the fatty ingesta for absorption, and it supplies the gap in the experiments of Bouchardat and Sandras, as to whether the pancreatic or duodenal secretion had the greater share in the digestion of starch; for here the duodenum was apparently quite healthy, and the head of the pancreas alone involved by a malignant disease, differing from the cases before recorded. These I find to be—a case of diarrhœa adiposa under Dr. Elliotson, which recovered under the administration of olive oil, a similar case met with by Mr. Lloyd, and three such cases seen by Dr. Bright. The results of post-mortem examinations in all the fatal cases, disclosed schirrhous disease involving the pancreas and duodenum. Surely this points to the pancreas as discharging a function having direct influence upon the digestion and assimilation of fatty matters. In a case of malignant disease of the pancreas, all medical treatment would be abortive; but supposing its function to be suspended by a non-malignant tumour, &c., we have yet to learn what would be the proper treatment.—*Glasgow Medical Journal, Oct.* 1853, *p.* 301.

60.—*Tapeworm.*—At a meeting of the fellows and licentiates of the College of Physicians in Ireland, Prof. Osborne mentioned that he had been lately led to use tannic acid for the destruction of tape-worm by several considerations, and especially from its action on gelatine, as well as on albumen. Having ascertained in the usual way the presence both of gelatine and albumen in these parasites, it is to be inferred from analogy that the former is in their integuments, and if so, that in tan-

nic acid we have the desideratum of an agent acting chemically on the worm, but not irritating the stomach or bowels of the patient, and, moreover, capable of being retained long enough to produce its full effect. He stated that in the cases of two patients whom he had under this treatment, the appearance of the ejecta indicated that the worms had suffered from a chemical irritant, being in some instances curled and contracted, and in others friable and broken down, when expelled by a purgative. —*Dublin Quarterly Journal, Nov.* 1853, *p.* 457.

61.—*New Remedy for Tænia, &c.*—Tænia is of so rare occurrence with us, that no individual practitioner sees enough of it to enable him alone fairly to test any medicine. I therefore beg to call the attention of my medical brethren to a remedy readily obtained, cheap, and pleasant, which I believe will be found quite sufficient. In 1852 I reported a case of radical cure of tænia, by the use of an emulsion of pumpkin seeds, after the oil of terebinth and even kousso had signally failed. The seeds abound in fixed oil, which is the anthelmintic principle, and has been employed with the happiest effect in half-ounce doses twice in the day, followed by an ounce of castor-oil.—Prof. Paterson, in *Philadelphia Medical Examiner.—Lancet, Feb.* 4, 1854, *p.* 132.

DISEASES OF THE URINARY ORGANS.

62.—ON BRIGHT'S DISEASE OF THE KIDNEY.

By Dr. Samuel Wilks.

[Dr. Wilks's opinions are entitled to the greater consideration, as he commenced the study of this disease under those who laboured with Bright himself. He observes]

It may not be useless, in the first place, to enquire what is understood by the term Bright's disease. The answer to this question may be thought to give at once a solution to its pathological nature: but this is really not so. It must be remembered that Bright's name was given to designate certain cases of disease marked by certain symptoms and certain morbid conditions of the kidney; and it must also be remembered that Bright included in his description a variety of forms of diseased organ, as well as a variety of symptoms. Among these were two very remarkable extreme conditions—the one a kidney large and white, often double the natural size, and associated with a very considerable dropsy of the whole body; the other a kidney hard and contracted, often only half the usual size, chronic in its character, and often destitute of symptoms. Bright's name, I say, belongs to one of these forms as much as the other, for he described both. No pathological theory, therefore, of Bright's disease can be admitted which does not include in its application both these forms of disease. If the two conditions be considered different, then more than one pathological theory is required. If all varieties are included under one pathological condition, as Frerichs writes, then the term Bright's disease becomes at once definite and scientific. If the conditions, however, are different, then Bright's disease has a mere nominal value, and has reference merely to a large class of cases which Bright described. In this general signification I think the term can alone be used. Thus, the expression is seen to have very little scientific bearing, and is nearly coextensive with that of renal disease, so large a field of observation did Bright open.

Anatomical Characters of the Kidney in Bright's Disease.—[Dr. Wilks observes, that though his first two classes are characterized by the large white kidney and the small contracted one, yet these conditions are merely to be regarded as the extreme conditions of two varieties of the affection.]

The large white kidney is produced by an inflammation of the secreting tubes and the exudation of an albuminous material, which, being constantly discharged and found in the urine, has been so fully described by Johnson and others. In a case which is fatal in a few days, as seen after scarlatina, often nothing is found in the kidney. If the case be more severe, or if the malady has existed for a longer time, then the organ is found swollen, gorged with blood, and the cut surface often

of a not uniform colour, some parts inclined to be pale and others dark. If the case be still further advanced, evidence is gained of the essential pathological condition of the organ, an inflammation of the uriniferous tubes. The kidney is gorged with blood, some perhaps having transuded into the tube itself, and mixed with it is the peculiar inflammatory secretion. Beginning with a slight amount of exudation in the tubes, all degrees beyond this are found until we arrive at the extreme condition where the whole secreting structure is blocked up with it, and in some places destroyed by its coalescence in masses. The tubes become misshapen and distorted, the walls are thickened, and on their external surface and between them some amount of albuminous material is thrown out; but while that in the interior is of a granular kind, that on the external is plastic or fibrous. In course of time the organ is much enlarged by the increase to the secreting part, the tubular portion is much diminished and encroached upon, and the organ has become exsanguine. Sometimes the veins may be filled with blood, and this gives the mottled or marbled look which some describe. The granular condition results from two different causes. The granules which some authors speak of are evidently little masses of deposit scattered all over the surface of the organ; while those generally alluded to are larger, and consist of bundles of tubes conglomerated together, and associated in this arrangement by the natural division of the veins on the surface.

Under the term *small contracted kidney* I allude, as I before said, not only to the extreme condition found, but to all lesser stages of the degeneration: for example, a kidney may be found becoming granular, but not yet wasted. The onward progress of the disease results, however, in the organ becoming very small, hard, and contracted. By contraction, I mean the surface, instead of being smooth, is puckered, uneven, and often having indentations. It is rough, and covered with granulations, and the capsule generally tears the surface in the endeavour to remove it. The disease is seen by the naked eye to be one essentially of the secreting structure. This is wasted, and in some parts so narrow that the straight tubes nearly reach the surface. It is also wasted irregularly; so that the thickness varies, giving an uneven outline to the edge of the kidney. As a rule, no deposit is found in these cases; while a true degeneration of the secreting structure has taken place, and this generally by the addition of a large quantity of fibrous tissue. Here I may state my surprise of the doubt which some authors have expressed at the presence of a fibrous matrix in the kidney. Of this I should have thought the proof were easy in a healthy kidney, and of its development in the morbid organ there cannot be the slightest doubt. In many of the small kidneys a large quantity of the substance is fibrous tissue. A part of this no doubt is the remnant of shrunken and wasted tubes, but a part also is a new development. Besides the fibrous tissue, the microscope shows tubes of all shapes and sizes, much distorted, and many shrunken to mere threads. In some parts of such organs the function must altogether have ceased, as the tubes appear quite isolated from any healthy connections, are nearly full of granular matter, having lost their natural epithelium, and have undergone fatty degeneration. The Malpighian bodies may be also found wasted to less than half their usual size, and probably quite destitute of function. The granules on the surface are masses of tube bound together by fibrous tissue, and thus marked out by the natural division of the veins. Thus, the organ often strongly resembles a cirrhosis of the liver, where a new fibrous structure, running in the course of the vessels, circumscribes masses of the secreting tissue. There seems no limit to the degree to which the kidney may degenerate. Together we sometimes find them weighing only three ounces, and when from any reason one kidney is more advanced in disease than the other, it may waste until not a portion of healthy structure be left.

One of the most remarkable changes which this form of kidney disease undergoes is the *cystic degeneration*,—a condition, according to the early essay of Simon, thought to be its natural termination. Some writers, however, as Frerichs, have almost ignored its existence, while Johnson appears to speak with doubt both as to its anatomy or even to its reality. Indeed, I have failed to gather with precision the opinion of the latter writer concerning these cysts, as he speaks of their appearance as the result of an ocular fallacy dependent upon the section of tubes, and at the same time of their production from the dilatation of tubes.

Of the very common appearance of cysts in the kidney I think there can be no

doubt; I now speak of microscopic cysts, and not those which are plainly visible to the eye, and those are in proportion, as a rule, to the degeneration of the organ. I confess for a long time I accepted the theory of their formation as given by Simon, both because of the want of a better and as it best explained the appearances, though the pathological theory of an exogenous growth of renal cells burst from their tubes was indeed not one to be readily received without further proof. I had fully made up my mind, however, of their real existence before any doubt was thrown upon them. The palpable ocular delusion of mistaking tubes for cysts may with care be avoided. The faith I had in their existence has been fully confirmed by many further observations. In many particular specimens a doubt may exist whether a certain appearance may arise from an incised tube or a cyst; but an examination of various parts of the same organ can leave no doubt. Occasionally I have met with a kidney where, from the circumstance of one being diseased in advance of the other, such a degeneration has occurred that nothing has been seen under the microscope but a mass of cysts, resembling very much in appearance a cluster of ova. These I have separated, detached, and rolled over in the field of the microscope, and have thus quite verified the fact of their real and independent existence. From this fact of being able to isolate them, and from their various forms and sizes, I formerly concurred in Simon's theory. Often can these cysts be traced from the ordinary dimensions of the renal cells to any size above. Since perusing Dr. Johnson's book and his theory of their production from the walls of the tubes I have not had an opportunity of examining many examples of the disease; but that they are not formed from the whole calibre of the tubes is certain, from so many being smaller than the tubes themselves. If formed from these structures, it must be by small protrusions from the sides, which afterwards attain a separate existence. In favour of their formation from tubes, it must certainly be said that they are produced at the expense of the latter, for where they are formed there the true tube is wanting. They are also seen in a row, running in the direction of the tube, and in fact occupying its position. They are firmly adherent to the surrounding tissue, and with difficulty detached. They seem also to be lined by an epithelium very like that of the tubes—at least the larger are; the smaller cysts I have seen almost empty, and containing but a little granular matter. In a very degenerated kidney—not much above the size of a walnut—the whole organ was converted into cysts whose diameter was very uniform and a little larger than that of the tubes. They were merely collected into an aggregated mass.

It has been taken for granted that the larger cysts found so often on the surface of the kidney are of the same formation as the microscopic ones. Of this there can be no positive proof, and indeed I thought the contrary to be the fact for some time; for, after examining many specimens of morbid kidney, I found those with visible cysts on the surface had no smaller ones detectible by the microscope, and, on the other hand, in the first few cases of the cystic degeneration I met with there were no cysts visible to the eye. I thought it thus possible that the larger ones might be formed by a dilatation of the urinary tubes, while the smaller had a distinct formation. The contents of the vesicles, not being urinous, is no objection to the first named theory, when it is considered how soon a decomposition would take place. With reference to the formation from Malpighian capsules, I think I have seen some cysts undoubtedly produced in this way,—at least I have found Malpighian bodies shrunken to half their usual size, only slightly connected with their tube, and evidently had lost their function, and so presented the appearance of isolated bodies.

That this cystic degeneration is the natural termination of the granular disease of the kidney, as Simon has hinted at, is not yet shown, though I believe it is a condition not uncommon, and generally to be found in the most advanced cases. In fact, the more perfect degeneration the greater probability of the presence of cysts, and, as I before said, I refer to microscopic cysts. The larger and visible ones appear to depend in many cases upon other causes; as, for instance, lately I observed a kidney in a patient who had died of phthisis scattered throughout with cysts, varying in size from that of a pin's head to that of a pea, and yet the intimate structure of the organ appeared quite healthy.

The *third form* of Bright's disease, which I call the coarse kidney, I have already referred to as being a subacute inflammation of the kidney, and having such an

amount of deposit discoverable in the tubes as is attributable to the degree of morbid action present.

With regard to the *fourth form* which I have mentioned I am in doubt how far it resembles the morbid appearance mentioned by others. It is not altogether like the lardaceous kidney of Rokitansky—at least it is wanting in the transparent bacon-rind appearance of the liver which is known by this name. A section of the kidney I speak of has the appearance of a dense piece of albumen, of a milky whiteness, and having no structure apparent or any masses of exudation. The kidneys are very large and dense, and the morbid deposit seems to have occurred quite at the expense of the secreting structure, the cortical part being enlarged and the tubular wasted. The tissue is hard, with difficulty separated with needles for examination, and found to consist wholly of fibrous tissue, though in parts, by close examination, some few remaining urinary tubes may be found. As the ordinary white kidney of Bright's disease consists of an inflammation, with an exudation from the surface of the tubes, so here the inflammation seems to have been of a plastic character, an effusion having occurred amongst the tubes and bound them together. As one may be likened to a bronchitis, so the other may be considered in the light of a pneumonia where hepatization has occurred—the lung structure become infiltrated with albuminous material, and so converted into one mass in which all the natural tissue is lost to the eye. As in the small kidney of the second form of Bright's disease a fibrous development often takes place, which is essentially chronic, and connected with the general wasting of the organ, so in these cases the same tissue seems more actively and rapidly produced, and forms in fact the principal disease. A nearer approach to this condition is found in the liver than in the lung—in fact, an exact counterpart of it is sometimes seen in cirrhosis, where the fibrous development of Glisson's capsule not only squeezes the tissues into little nodules, but sometimes destroys it so that no healthy tissue is left visible to the naked eye. Thus, particularly towards the surface, are seen occasionally in this disease of the liver, white masses of fibrous tissue of considerable dimensions, and in which only by the microscope can any remains of the normal structure be discerned. Apparently a similar change occurs in these forms of morbid kidney, and of a like chronic kind.

The same condition is found sometimes in the kidneys connected with bladder disease and where a chronic inflammation has taken place. Lately I examined the kidneys of a man who had died of stone. They presented an appearance very common in such cases. The pelvis was dilated, and full of muco-purulent fluid, the structure of the organ breaking down and in parts suppurating. A section showed some parts white and others red. The former had a swollen appearance, and projected from the surface, and were advancing towards a state of suppuration. In the red parts the tubes could be made out, and were full of granular matter. The white portions to the eye were like pieces of hardened brain, and only on very careful dissection could any trace of structure be made out, the whole being in fact one solid mass of hardened lymph. Towards the surface the fibrous structure was disappearing, and suppuration was commencing. When carefully torn up, a piece presented nothing but fibrous tissue and fibre-cells in all stages of development. The nature of the inflammation, in this particular case, was shown by the condition of the capsule, which was closely adherent to the kidney and the parts around, very vascular, and three times its natural thickness and density. I allude to this case as showing the identity of the morbid process with the varieties of kidney I have just mentioned. In this case a plastic inflammation of the whole kidney had occurred, which had completely albumenised the structure, and the same had occurred in the organs I have described.

Morbid Anatomy of the Fatty Kidney.—The subject of fatty degeneration has of late very much occupied the attention of pathologists, and the comparative novelty of its discovery has caused it to be looked for as a suitable explanation of many previously obscure conditions. Much valuable information has been gained by these investigations, but the full pathological interpretation of the condition has yet to be fully understood. It is sufficiently clear, that a fatty state of the body in general, and the viscera in particular, is not one of health. Age has a tendency to the production of fat and disease under particular circumstances. In my own note-book, I have a great number of cases where this condition has presented itself, both in particular organs and in a general manner. Thus, as a rule, in all bed-ridden persons, particularly if advanced in life, fatty degeneration occurs; or where confined by some chronic

disease, excepting always, of course, cases where a very rapid and exhausting malady is going on. Thus it is mostly seen in long bed-ridden paralysed patients, in those long confined with scrofulous and cancerous affections. In the latter diseases, I have not time to discuss the question, why wasting at one time is produced, and at another a fatty degeneration; it is sufficient to remark, that this condition is constantly found. In patients who have suffered from any marked morbid state of the blood, it is particularly liable to happen, such as after perpetual fever or common fever. In two or three cases of sudden death, during convalescence from this latter disease, a fatty state of the heart has existed; one of the most marked causes, however, of fatty degeneration, is to be found in intemperance. This is mentioned by Bright in a former voulme of these Reports, and seems to result from a constant imbibition of malt liquors rather than spirits. For this reason, in all those who have died from delirium tremens, induced by intemperate habits, I have found a fatty degeneration of organs. A fatty degeneration may be local, as in the liver of phthisis. I have alluded thus to the subject of fatty degeneration, because without its general consideration, that of the kidney cannot specially be understood, for I am sure that it has been by a too exclusive regard to one organ, that the true pathology of the particular case has been often misinterpreted. A fatty liver cannot be understood without a general reference to the body at large, much less be put down as a primary morbid condition; neither can a fatty heart be connected of necessity with sudden death, on account of the investigation of fatal cases where this has occurred, seeing that in the majority of cases where a fatty heart has been found, death has not occurred immediately through the failure of that organ. In the same manner, a fatty kidney may indicate nothing of itself. When I speak of this condition, I use the term exclusively to designate those cases where the fatty state seems the only morbid condition. It may be found existing in diseased kidneys. Thus the albuminous deposit in the large white kidney often undergoes fatty degeneration; so, again, we may find the small granular kidney very fatty. The state, however, I mean to refer to, is a simple fatty one, without any tendency to Bright's or other disease; indeed, the two conditions have nothing to do with each other. A fatty state may exist in an organ otherwise healthy, or in a diseased one. Bright's disease of the kidney may occur without the presence of any fat; and, on the other hand, a fatty state is often found, which can only be looked upon in the light of a degeneration. In certain subjects, particularly those under the conditions above mentioned, directly the body is opened, a general fatty state is recognised both in the integuments and in the interior, about the intestines, &c.; in each case the viscera are found frequently to contain more than usual fat. I never found a kidney containing very much fat, whether otherwise diseased or not, without very visible traces of the same condition existing elsewhere. All this shows a general pathological cause for it, rather than a special one in the organ itself, and that when it occurs in a morbid kidney it is altogether secondary to the disease itself. It may be true that Bright's disease may indirectly be connected with a train of causes which have resulted in the fatty degeneration; but then other organs are seen to share the fat with the kidney. I do not speak of every slight or local change in a kidney, where a tube here or there may contain some fat. This may arise from a degeneration confined to that part from a special cause. When I speak of true fatty kidney, I allude to an organ which is in an analogous condition to that of the liver, where we suppose that the mere superaddition of fat has produced the morbid state; in fact, an organ similar to the permanent state of that found in the dog or cat, where it presents an appearance healthy to the naked eye, but yet containing an abundance of fat. So I have seen a remarkably fatty kidney in the human body pronounced healthy, because it was not otherwise structurally diseased. Thus, also, a very fatty liver may be overlooked, unless the fat be in such quantity as to alter perceptibly its colour and consistence; and, speaking of this organ, as we look upon the fat so commonly found in the nutmeg liver or cirrhosed liver as a mere consequence or complication of a more serious affection, and the true fatty liver where the organ only contains an excess of fat, so in an analogous manner do we speak of fatty kidney. In these cases, then, the cells are seen to contain many oil globules, and which sometimes burst, setting their contents free, which are found in drops throughout the tubes. In the large white kidney the fat is commonly found mixed with the exudation, as if this had undergone degeneration, and the separate granular corpus-

cles are found to have drops of oil within them. In the small degenerated kidney we often find the tubes very diseased, altered in shape, and in parts devoid of epithelium, and containing only granular matter and fat.—*Guy's Hospital Reports*, Vol. viii., *p.* 232.

63.—ON THE DROPSY OF BRIGHT'S DISEASE.

By Dr. Samuel Wilks.

It was in the investigation of dropsy that Bright was first led to his discovery. As a symptom of renal disease, dropsy is found in a greater or less degree at some period, though not invariably so. In the first form of the disease, when the inflammation is going on, to the enlargement of the organ, dropsy is a uniform symptom. In bad cases it is more excessive than in any other malady, and much more general. This universal anasarca, or its existence in all parts of the body, constitutes the peculiarity of renal dropsy, and testifies as to its immediate dependence upon a general cause, that is, poverty of the blood. Thus we find among the first parts which become dropsical are the ankles, the face, with the conjunctiva, and the genital organs. Indeed, in the majority of instances, if we see the scrotum and penis included in a dropsical condition, we may safely conclude the presence of renal disease. The cause of dropsy, in many cases, as in obstruction to the flow of the blood through the chest in lung or heart disease, is simply mechanical, or in ascites from a cirrhosis of the liver; but in renal disease it depends upon the condition of the blood, and thus its universality, for a watery conjunctiva or œdematous scrotum could but rarely depend upon a local cause. This state of the blood is produced by two causes; first, by the scanty secretion of urine, by which much water is retained in the blood, and secondly, by the flowing away of its albumen, whereby also its specific gravity is much diminished. From the first cause a repletion of the vessels would occur, and, of necessity, a dropsy ensue. This would be in part mechanical, and allied to the other varieties of the affection. It is, however, from the poverty of the blood, arising from the drain of albumen, that the dropsy generally occurs, and for the same reason as œdema of the leg is often found in chlorosis. Of the two causes which operate to produce a watery state of the blood, a scanty secretion of fluid by the kidney, and a plentiful secretion of albumen by the same organ, I should say the latter was the more influential of the two. With a very scanty secretion two results follow which are liable to produce a transudation through the vessels, a diminished specific gravity of the blood from the retained water, and an increased pressure from its superabundance; and yet I think the effect of these is less in the production of dropsy than the discharge of albumen which is constantly taking place from the vital fluid. I think my experience shows that a highly albuminous urine, even with a considerable amount of fluid, is more likely to be accompanied by dropsy than where a less secretion occurs, and consequently less albumen is thrown off. Little, however, can be said on this point, as an accurate measurement of the albumen is difficult, and so many other causes operate to influence the result. Thus, if the urine be plentiful and its contained salts abundant, but albumen at the same time be taken from the blood, the specific gravity of the latter fluid is lowered, and a disposition to dropsy is produced: whereas, if the urinary secretion be scanty, or all but suppressed, generally a diarrhœa is set up, or some other vicarious action, which may relieve the blood, and so the immediate consequence in this respect is rarely seen. It is not common, however, to have dropsy to any amount in the chronic degeneration of the kidney, even if for days together the patient have his urine suppressed, and die from its toxœmic effect. On the other hand, dropsy is constantly seen to exist with a normal amount of urine secreted, leaving the abstraction of albumen from the blood as the sole cause of its production; remembering, however, always, a softened and relaxed state of the tissues, which may assist the transudation of fluid. It is clear, then, why, in the first form of inflammatory disease, with a scanty albuminous urine, excessive dropsy should exist, and why, in the second form of chronic degeneration, where a plentiful secretion exists with but a slightly albuminous state, none, or but occasional dropsy should be. In this latter form, if, from cold or other cause, a dropsy come on, the urinary secretion is at the same time seen to be much interfered with. We see, too, the reason why Bright, in the first instance, coupled dropsy with albuminous urine,

and how it was subsequent investigation which discovered the diseased kidney where neither of these symptoms had existed, or at least been observed. That the dropsy is dependent immediately upon the watery condition of the blood, has been proved satisfactorily since the first analysis of Bostock, and it is thus made to be in a similar condition to that of chlorosis. The experience of the symptoms, and the beneficial result of the treatment by iron, all point to the similarity of the two conditions. There is one symptom, however, so remarkable in chlorosis, which is rarely found in Bright's disease, I mean the cardiac bruit de soufflet and the bruit de diable. I have constantly placed my ear to the heart of very anemic cases of Bright's disease, expecting to hear a soft systolic murmur at the aorta, but have failed.—*Guy's Hospital Reports*, Vol. viii., *p.* 276.

64.—ON BRIGHT'S DISEASE.

By Dr. H. Bence Jones, F.R.S., Physician to St. George's Hospital.

[In this lecture Dr. Jones dwells upon the peculiarities of the urine in this disease, relating chiefly to prognosis and treatment.]

Congestion causes the diffusion of albumen, fibrin, and blood globules, and a decrease in the specific gravity of the urine at the same time occurs, in consequence, probably, of the congestion hindering the escape of some substances out of the blood. By Bright's disease, precisely the same effect on the urine is produced. Between the urine passed by a patient after the cholera, or after scarlet fever, and the urine of a patient with Bright's disease, I see no difference whatever, either chemically or microscopically. The low specific gravity in Bright's disease is to me produced by exactly the same cause as the low specific gravity when the kidneys are inflamed after injury of the spine, or when they are congested in cases of chylous urine. Generally, the decrease of specific gravity may be taken as the index of the extent to which the kidney is affected; that is, the lower the specific gravity of the urine when albumen is present, the greater the alteration in the circulation through the kidney, the greater the congestion in chylous urine and after cholera; the greater the inflammation in spinal cases, and the greater the so-called degeneration (the effect of congestion and inflammation) in Bright's disease.

There are two opposite classes of cases of Bright's disease which require to be pointed out as exceptions to this law. In one class of cases there is considerable thirst, and very large quantities of urine are passed daily, and the specific gravity is consequently thereby reduced. In the opposite class of cases, the quantity of urine passed daily is exceedingly small, and hence the specific gravity rises sometimes very considerably above the healthy standard.

I shall illustrate both these classes by some examples.

A medical man was sent to me from the country, under the impression that he was suffering from diabetes as well as Bright's disease. He had no urine with him, and I asked him to come the next morning with the urine made at night. The following day he brought four quart bottles full, which he said, was about the usual quantity passed in twelve hours. It contained no sugar; had a specific gravity of 1006, and was highly albuminous.

A woman, aged 43, who had œdema of the legs two months, was in the habit of passing three quarts of urine in twenty-four hours; the specific gravity usually was from 1007 to 1010. She always complained of great thirst. On one occasion, the quantity of urine was three quarts in fourteen hours; the specific gravity was then 1004.

A farmer, aged 50, was brought to me for diabetes. The urine was highly albuminous, contained no trace of sugar. The usual quantity was seven pints in twenty-four hours; the specific gravity was 1010. His only complaint was of head-ache.

Many similar cases I might bring before you; but these are sufficient to show that the quantity of urine must be taken into account before any conclusions as to the extent of the degeneration of the kidneys can be drawn from the specific gravity of the urine.

I pass on to the opposite exception, to the law that the specific gravity indicates the degree of disease of the kidney.

A woman, aged 38, had swelling of the legs for three months. She had a healthy, florid look. The dropsy was excessive. At one period of her illness, only three

ounces of urine were secreted during one night; the specific gravity was 1036·2. It was intensely albuminous, loaded with urates, and contained many fibrinous casts. For six weeks after her admission into the hospital, the quantity of urine was seldom more than half-a-pint in twenty-four hours; the specific gravity was from 1027 to 1033. In six weeks more, the urine became more plentiful, specific gravity 1017·4. She gradually became comatose, and died.

A woman, aged 21, had swelling of the legs for twelve months. They were always most swelled when the catamenia were present. The face was flushed and full. In twenty-four hours, half-a-pint of urine was made; it was exceedingly albuminous, loaded with urates, specific gravity 1035. She complained of sickness and drowsiness. By aperients and the vapour-bath, the urine became clear. The specific gravity fell to 1030, and the dropsy was lessened. After she left the hospital, I lost all knowledge of the progress of the disease.

Other cases like these I have seen, and from them I cannot but warn you from founding a favourable prognosis from urine of high specific gravity, even when urates are precipitated.

These exceptions lessen considerably the value of the knowledge to be derived from the specific gravity of albuminous urine; but, by accurately observing the quantity of urine as well as its weight, you may approximately determine the amount of congestion in the kidney; and, if this be frequently determined, the existence and degree of the disease of the kidney may be foretold.

Having spoken of the quantity and specific gravity of the urine in Bright's disease, I will pass on to the quantity of albumen in the urine.

In my last lecture on chylous urine, I showed you how rapidly the urine may vary in the quantity of albumen which it contains; and in this, as well as in at least one other disease (mollities ossium), large quantities of albuminous substance may be thrown out by the urine without the existence of any serious disease of the kidney. The quantity of albumen is a test of the amount of congestion of the kidney at that time; and if at all times a large quantity is found in the urine, it indicates that the kidney is always highly congested, and it becomes most probable that this is produced by organic changes in the texture of the kidney. Thus the amount of albumen in the urine is often considered as bearing a direct relation to the amount of degeneration in the kidney. If this were so, then little albumen in the urine would, on the other hand, indicate slight affection of the kidney; whereas there may be the most extensive disease of the kidney, and some cause may be in action which temporarily prevents the congestion of the kidney (as, for example, some determination of blood to some other part of the body); then the amount of albumen in the urine may be very much diminished, and sometimes none at all may be detectible.

A labourer, 55 years old, was admitted on the eighth day, of acute pleurisy of the left side. The heart was displaced, the cavity of the chest being full. There was a history of œdema some months previously, and as his heart was healthy, the urine was carefully examined, but no trace of albumen could be found. The effusion increased; the day but one after his admission the urine was again examined; it was quite free from albumen; specific gravity 1025; it was not nearly so deep coloured as it usually is found to be in cases of pleurisy. A week after his admission the difficulty of breathing increased; he had an epileptic fit; the urine was still not deep-coloured, contained a little urate of ammonia; specific gravity 1022; it gave a precipitate of earthy phosphates by heat, nearly clearing with a drop of dilute hydrochloric acid; nitric acid alone gave a slight cloudiness. On account of the difficulty of breathing, paracentesis was performed; eighteen ounces of purulent fluid were drawn off. Shortly after the operation, the breathing was free; two hours after the pulse was irregular and unequal, and the difficulty of breathing was nearly as bad as before. During the night he had three attacks of convulsions; in the last he died.

Feb. 9, 1847.—On examination, both kidneys were highly granular.

Sometimes the albumen is absent only at the commencement of an acute inflammation of another part.

A youth, aged 16, was in St. George's Hospital, under Dr. Chambers. He had some œdema and much fever, with rigors. In a day or two he complained of excessive pain in the left side; the urine did not coagulate with heat alone, and very slightly with nitric acid. In four days the heart was pushed to the right of the sternum; the fever was diminished; the urine was more coagulable by heat and nitric

acid; one specimen had specific gravity 1015, another 1010. At the end of another fortnight the urine remained still coagulable by heat and acid. On account of the difficulty of breathing, paracentesis was performed, and about four ounces of pus were drawn off from the chest; the difficulty of breathing increased, and he died forty-eight hours after the operation.

When the capsules of both kidneys were removed, the surface appeared quite smooth; the vessels were injected; the substance looked more white than natural. On section being made, there was an increase of cortical structure, which was much more mottled than natural.

These, and many such cases, prove that the quantity of albumen does not indicate the amount of disease in the kidney, but it does show the amount of congestion at the time of the observation. A highly diseased kidney may be very slightly, or not at all congested, and a highly congested kidney may be very slightly diseased. The quantity of albumen may be very small in the first case, and very great in the last.

The general rule that the quantity of albumen is proportioned to the state of the congestion of the kidney, is of great importance for treatment and prognosis; and the exceptional cases mentioned above only confirm the general rule, that the quantity of albumen indicates the degree of congestion, and not the degree of degeneration. Such cases are also instructive, because they show the necessity for making more than one or two examinations for albumen before it is concluded that no disease of the kidneys exists.

In the first of the two last cases, I have mentioned the pale colour of the urine at the time when acute inflammation of the pleura was present. This paleness of colour may be very frequently observed when blood is not present to discolour the urine. When the kidneys are healthy, acute inflammation causes the urine to become deeply coloured, almost proportionately to the intensity of the inflammation; but when the kidneys are diseased this proportion ceases. In Bright's disease the most intense inflammation of a serous membrane may exist, and yet the urine throughout may show no alteration of colour or appearance.

Among many examples of this, perhaps one of the most striking that I have seen was in a medical man, who for many months had pale, straw-coloured urine, highly albuminous, specific gravity about 1010. He was attacked by acute pericarditis, with delirium and loss of sleep. His symptoms exactly resembled those which occasionally occur in the pericarditis of rheumatic fever. He died about the tenth day of the inflammation; the urine throughout presented no change whatever in colour or specific gravity; it had no resemblance to the urine of acute inflammation.

Such, then, are some of the facts which may be derived from observation of the specific gravity, the coagulability, and the colour of the urine, in cases of disease of the kidney. You will see from this, that chemistry cannot tell the exact state in which the kidney will be found after death, but it does give much help in determining the state of the circulation through the kidney during life.

That which chemistry is unable to effect, the microscope professes to make clear. According to the microscopic appearances of the urine, the appearances observed in the kidney after death have been subdivided into many different diseases; and, instead of a single disease in different states of congestion and stages of deposit, we are asked to recognise as many different diseases as there are different microscopic appearances in the urine. Thus, in urine may be found, 1st, tube-casts, with recent gland cells; 2ndly, waxy tube-casts; 3rdly, fatty tube-casts; 4thly, casts with fibrin; 5thly, casts with pus or blood. These are said to be the distinctive signs of nearly as many distinct diseases. First, of acute or chronic desquamative nephritis. The second disease is, waxy degeneration of the kidney. The third, fatty degeneration; and this is divided into two perfectly distinct diseases,—granular fatty degeneration, and mottled fatty degeneration. The fourth disease, corresponding to the fourth microscopic appearance, is acute and chronic non-desquamative nephritis. The fifth disease is suppurative nephritis. This subdivision can scarcely fail to remind you of the proposed subdivisions of some cutaneous diseases founded on the appearances of the eruption. There is no practical gain in subdividing scabies or erysipelas into different diseases, according to the appearances of the eruption. What, think you, was gained by assuming as many different syphilitic poisons as there were different forms of secondary syphilitic eruption? I shall keep to the simpler view, which appears to me to be truer, simpler, and more practical,—a single disease, in

different states and stages of congestion, deposit, and wasting, not arising from the elimination of any peculiar animal poison, but produced by a diseased state of nutrition, leading to the deposit of fibrin, fat, and pus, and ultimately to the wasting of the structure of the organ.

Such are the broadest outlines of the different views of Bright's disease. There are, at present, four cases of this disease under my care in the hospital. You will see how little assistance, in regard to their treatment, can be derived from the microscopic examination of the urine. Nevertheless, with the hope of arriving at more certain knowledge, the microscopic appearances of the urine should be carefully observed. You may thus help to determine whether there is a vital process of desquamation; a rapid formation and shedding of renal gland-cells; whether the so-called large granular fat kidney and the small contracted kidney are the result of two essentially different morbid processes; whether the epithelium in this last state is disintegrated and swept away, and in the former state transformed into fat; whether the smooth, mottled, fatty kidney bears no relation to the granular fat kidney, or whether the deposit of fat is not unessential in both states of kidney, appearing as pus may appear in any stage or state of the disease.

Those of you who may have the opportunity of seeing much of scarlet fever will, by careful microscopic examination of the urine, be able to add importantly to our knowledge. The late Dr. Miller, than whom I know no one who had so carefully watched the sequelæ of scarlet fever, and from whom, if his life had been spared, more valuable knowledge would have been obtained, told me that he had seen in the urine every variety of microscopic appearance attributed to Bright's disease, and that in *post-mortem* examinations no distinction could be made, for all forms of deposit were to be found after scarlet fever. The microscopical questions regarding the state of the urine after scarlet fever will repay the minutest and most extended research. Whatever you observe note it carefully, and publish it slowly, for premature publication leads only to corrections and ends in disputes.

You will say, what is to guide me in my prognosis and treatment? I reply, do not trust alone to the microscopic appearances in the urine, but take the case as a whole. In a case of consumption, it is rarely that you can determine by the stethoscope alone the course which the disease will follow, or the best treatment to be adopted. The stethoscope may give most important assistance, but the history, the general symptoms, the special circumstances, will still more correctly determine your judgment as to the duration of the case and the most suitable treatment. So, also, in renal diseases. The microscopic examination may give most valuable knowledge regarding the state of the kidney, *e.g.*, the pus may indicate suppurative inflammation; the blood, a loaded state of vessels; the fibrinous casts, the degree of recent congestion; the fatty matter, the duration, perhaps, of the evil; but it is far more important to take all the features of the case than to make the microscope the sole foundation for your prognosis and treatment.

In albuminuria, as in other diseases, take the history first. If you can trace the complaint to scarlet fever, to sudden cold, or to pregnancy, the chance of recovery is far more favourable than if the disease has insensibly approached. I could give you many instances of recovery where the disease commenced from such causes; but I know of no perfect recoveries where a bad state of health has given rise to disease of the kidney as a secondary consequence of a previous cachectic state.—*Medical Times and Gazette, Nov.* 26, 1853, *p.* 545.

65.—ON ALBUMINURIA.

By Dr. E. A. Parkes, Professor of Clinical Medicine at University College.

[From some interesting experiments by Dr. Parkes, it is shown that we must not always consider that albumen in the urine proves the existence of Bright's disease; far from it. From certain conditions of the kidney, such as inflammation and hyperemia, &c., albumen may appear in the urine. These are cases of "*blood-albuminuria.*" But there is another and far more important class of cases in which albumen appears. These are cases of "*food-albuminuria.*"]

What now is the importance of this "food-albuminuria?" Is it merely an attendant on advanced kidney-degeneration, when the vessels and membranes of that

organ are so diseased as to allow the fresh accession of albumen taken with the food rapidly to pass through them? Is it merely that after food, an increased congestion of the kidney takes place, and therefore increased albuminuria?

I do not feel anxious to answer this question definitely at present. The facts already known are too few in number. But some discussion on it may not be uninteresting.

1. It is quite certain, that the food-albuminuria may occur in cases in which the renal disease is slight, as well as in advanced cases.

2. After food there may be increased congestion of the kidneys. But, if so, and if the increase of the albumen is owing to this, why should the water of the urine be sometimes, perhaps often, diminished, and why should not the other solids of the urine observe an equal increase with the albumen?

3. After food the albumen of the blood may be increased in quantity, the circulation may be quickened, and thus even without actual congestion of the kidneys, more albumen may pass through its capillaries, especially if the kidney's structures are very much diseased. But, in answer to this, it may be objected, that the increase in the force of the circulation is inconsiderable, unless a vast quantity of stimulating food be taken, and that even if it were greatly augmented, one does not see how this should so especially affect the albumen in the urine. With regard to increase of the albumen in the blood after meals, very few comparative experiments have yet been made. In animals long deprived of food, the albumen has been found diminished, as compared with the amount present after food; but whether in the human subject, after a common meal, any difference will be found in the composition of the blood from the ingestion of some two or three ounces of albuminous food, is not yet certain. I have made some experiments on this point in two cases of diabetes, and have found, that, in this disease at any rate, the per centage of the albumen in the venous blood-serum is not augmented after food. Admitting, however, that the albumen of the blood is augmented after meals, perhaps the union of these two conditions (increased activity of the circulation, with increase of albumen in the blood), may account for the increase of the albumen in the urine. It is certainly difficult to disprove this supposition with the few facts already known.

4. Another supposition presents itself, as difficult, at present, to establish as any of the former conjectures, but still carrying with it, in my mind, at any rate, a certain amount of probability: it is this,—we know that during the process of digestion in the stomach, the albuminous substances undergo extraordinary changes. We also know, that during the transit of the blood through the liver, the fibrin and albumen undergo still further modifications; so that, according to Lehmann, thirty per cent. of the albumen entering the liver in the portal blood, disappears in that organ, and is not to be found in the blood of the hepatic vein. The liver is not to be considered as a mere maker of sugar, or of bile, but as a most potent laboratory, exerting an overwhelming influence on every digested aliment which enters it, and the influence exerted on the albuminous aliments is not the least important.

To these facts I will now add another of a different order. If crude albumen be taken and introduced at once into the circulation, through the jugular vein, it is incapable of assimilation, and is rapidly excreted in the urine, and a temporary albuminuria is thus produced. This singular result, for which, as for so many beautiful experiments, we have to thank Bernard, proves that the albumen must be prepared in some way before it reaches the lungs, in order that it may undergo certain changes during respiration, which then probably render it in a fit state to be assimilated by the tissues.

The inference now presents itself, may it not be possible that by some failure in its preparation, either in the stomach or in the liver, the albumen enters the right side of the heart, still crude, and in a condition similar to that in which it would have been had it been introduced through the jugular vein; and, thus being unassimilatable, is it not excreted, as in Bernard's experiment, by that ready outlet the kidney?

In support of such a supposition, we have the facts, that many cases of kidney disease seem to be most probably of blood origin, and that among the common antecedents of Bright's disease are circumstances of diet or mode of living which would be likely to impair the processes which should go on in the stomach or liver.

In how many cases of Bright's disease have dyspeptic symptoms been present for a long time before renal signs have shown themselves? In how many other cases are signs of liver diseases coincident with the renal signs? In how many *post-mortem* examinations, although no liver disease has been suspected, do we find evidence that for a length of time the structure of this organ has been seriously diseased?

It is obvious, that all these considerations give us nothing in the way of proof, though they may increase the probability of the hypothesis. I do not see, indeed, how, except by extended observation, and perhaps by experiments on animals, the hypothesis can be proved. If it could be proved, however, it would be highly important, as it might be found to have an extended application, far beyond the range of kidney affections. But I will not dwell upon it any longer, and the basis of facts is narrow. All we can venture to say now is, that, whatever may be the explanation of it, it is certain that in some cases of Bright's disease the excretion of albumen in the urine is influenced in an extraordinary way by food.—*Med. Times and Gaz., April* 22, 1854, *p.* 397.

66.—ON DIABETES.

By Dr. H. Bence Jones, F.R.S., &c.

[There is no *one* test to be relied upon for the detection of sugar in urine. The copper test is most commonly employed, but as other substances, besides diabetic sugar, will reduce the oxide of copper, this alone is not sufficient. The same remarks apply to the microscopic test, for torulæ being present in the urine does not always prove the presence of sugar. With regard to the disease itself,]

It has been said that it exists in old people, to a slight extent, always. A gentleman, who, I hope, will pursue this subject and publish his own results, has written to me to say that the most careful repetition of the experiments made by M. Dechambre, in the Salpetrière, did not give the same results. Old people are not necessarily diabetic; but, in referring to the notes of many cases of diabetes which I have seen during the last two or three years, I find, out of twenty-nine cases of which I kept notes, eleven were above sixty years of age, and six of these eleven above seventy years. Nor is this the most important fact regarding these cases; but it appears to me, that the disease in old age is generally milder and more chronic than at other periods of life.

[Next to the old, it has been said that fat people best resist the progress of this disease. On the *treatment*, Dr. Jones remarks:]

First, regarding the use of wine and porter. M. Bouchardat has long recommended claret in this disease, and to the amount of two bottles even in the day. Dr. Prout used to permit his patients to take porter. Being desirous of determining which of these directions was to be preferred, I made some experiments regarding the amount of saccharine matter and acid in wine and beer. I have come to the conclusion, that claret is usually perfectly free from all saccharine matter. The same may be said of Burgundy, Rhine wine, and Moselle wine. Very rarely, indeed, a sherry may be met with which contains no sugar, but generally sherry, port, Madeira, Marsala, contain amounts of sugar varying from 2 grs. to 34 grs. to the ounce. The best porter gave me from 23 grs. to 40 grs. of saccharine matter to the ounce; the best stout from 45 grs. to 64 grs.: the best bitter ale from 14 grs. to 130 grs. to the ounce. Hence it appears that claret will not increase the sugar in the urine, while porter will do so considerably. Direct experiment with diabetic urine has also proved the same fact.

Spirits, as brandy, whisky, rum, usually contain no trace of sugar, and hence they may be prescribed for diabetic patients.

M. Bouchardat, who has seen more of this disease than any one, says that milk is not allowable. The most careful experiments lead me to the opinion that milk scarcely increases the sugar in the urine, even when it is the sole article of diet.

[In the case of a farmer, aged 37, under Dr. Jones's treatment, "at the end of two complete days, in which milk and nothing else was taken, only two grains of sugar existed in each ounce of urine." The patient said]

"My kidneys and bladder are always most comfortable under milk diet, but I frequently have a little heartburn; but I do not feel the same morbid irritability of

stomach that I do when living entirely on animal food." As I wished still further to try the effect of milk diet, he undertook to take nothing else for a week. The daily quantity was from 100 oz. to 130 oz., and on one day 149 oz. He passed from 50 oz. to 90 oz. of urine.

July 23rd. His pulse was 72; his tongue clean; he looked florid and well; had no irritation of the bladder; could take tolerable exercise; had gained 8 lb. in weight, being now 12 st. 10 lb. He said that from the time of his first visit to me, "all the flour he had eaten would not one quarter fill his hat, and he had not taken a pocketful of vegetables." The urine was perfectly free from sugar.

From this case, it is most probable that milk-sugar is not easily converted into glucose in the human body. I have, therefore, constantly permitted it to be taken by diabetic patients. It is apt to give rise to constipation, and this has been best obviated by taking an equal quantity of fluid magnesia with the milk in the morning.

[As one of the terminations of diabetes is sometimes phthisis, Dr. Jones was led to prescribe cod-liver oil. He says:]

[To a young woman in St. George's Hospital I gave an ounce daily for three months. In this time she gained eleven pounds in weight. Her thirst so diminished that she passed only 2½ pints of urine in twenty-four hours, instead of twelve pints.

A man, 40 years old, came into the hospital passing seven pints of urine in twenty-four hours. He was put on cod-liver oil, 1½ ounces in the day, with a drachm of liquor potassæ. In the first fortnight he lost four pounds and a-half. He then took three ounces of oil in the day, with two drachms of liquor potassæ, and in a fortnight he had gained eight pounds. The quantity of urine was reduced to three pints. At the end of five weeks from his admission, he went out at his own request, saying he was stronger than he had been for eight months, and that he was quite well. The urine still contained a small quantity of sugar.

An enormous amount of cod-liver oil may be taken in diabetes; thus one of my patients took, in five weeks, eight pints fourteen and a-half ounces.

[Another patient who took 8 pints and 14½ ounces of cod-liver oil in five weeks, increased in weight, and the urine decreased from five pints, specific gravity 1040, to 2½ specific gravity 1032; though the sugar never disappeared. Dr. Jones enumerates a host of remedies which he has tried in diabetes, but no specific has yet been found. He observes:]

When we look at the morbid anatomy, when minute microscopical examination can give no clue to the seat of the disease, when it pronounces that the stomach and viscera are healthy, when it indicates that a functional error has ended life, we are led to hope that further investigation (some remarkable experiments have lately been published by Dr. Harley on the artificial production of diabetes in animals by the action of stimulants injected into the vena portæ) may lead to the perfect theory of the disease, and by this to the radical cure, instead of the palliative treatment, of this most interesting disorder.—*Medical Times and Gazette, Feb.* 4, 1854, *p.* 101.

67.—ACTION OF VARIOUS REMEDIES IN DIABETES.

By Dr. W. R. Basham, Physician to Westminster Hospital.

[In the cases of diabetes in which these remedies were employed, the principle rested on the opinion that "diabetes is a disorder of the digestive and assimilative functions, in which the power of conversion and appropriation of the farinaceous and amylaceous elements of food is singularly perverted and disturbed." Sugar or glucose being rapidly formed and absorbed and quickly passing into the circulation, is, without further metamorphosis, excreted by the kidneys. The regimen consisted in diminishing the starch and fecula of the food, and employing the nitrogenous class of aliments.]

The medicinal remedies may be classed as follows, the more novel ones being placed first:—

1. The *permanganate of potass*, hypothetically to supply the stomach with an increased amount of oxygen, by which the metamorphosis of the farinaceous material should be hastened forward into a higher stage of oxidation than that of sugar, permanganate of potass, as is well known, out of the body, converting sugar into oxal-

ic acid. Mr. Sampson, who first employed it (*Braithwaite's Retrospect*, Vol. xxvii.) states that his attention was drawn to this salt when seeking for some remedy which should give out oxygen when taken into the stomach, with the view of assisting the perfect action of the digestive and assimilative functions. He records a case in which it appeared beneficial. We must not overlook the fact, however, that a prominent error in the digestive process of the diabetic patient is the premature and rapid conversion of the fecula of food into sugar; it is hasty and imperfect —not tedious or protracted.

2. Agents that hypothetically should retard and delay the formation of glucose in the stomach. Certain substances possess the property of arresting the saccharine, vinous, and acetous fermentations. If glycerine be added to a half-fermented infusion of malt, the further formation of acid is checked; and I have found that a mixture of potato starch and dilute nitric acid undergoes chemical conversion into dextrine and glucose more slowly, and is all but arrested if glycerine be previously mixed with the starch. *Glycerine, creosote, and sulphite of soda* have been tried on this principle.

3. *Opium and opiates*, to act on the nervous system; to diminish the excitement and irritability of the nervous centres.

4. Remedies which relieve thirst and aid the digestive process by the supply of hydrochloric acid, and which tend indirectly to diminish the amount of fluid excreted by the kidneys, as recommended by Dr. Owen Rees. ('Medical Gazette,' vol. xl. p. 365.) *Hydrochloric and some vegetable acids.*

5. *Diaphoretics*, stimulating the palpably defective cutaneous secretion, and thus vicariously lessening the proportion of fluid to be excreted by the kidneys. Antimonials; warm baths; flannel clothing.

6. The use of *alkalies*, particularly ammonia; on the hypothesis of Mialhe, that the starch of food is equally converted into sugar by healthy and diabetic persons; but that in health it is metamorphosed and burnt off by the presence of alkalies, undergoing complete oxidation, and is ultimately discharged as carbonic acid from the lungs; but that in diabetes it is not oxidized owing to the deficiency of alkalies in the blood, the sugar without further change passing off by the kidneys.

These several remedies have never been administered in conjunction; and if in the same case two or more have been tried, a day or two has been allowed to elapse, that the observations recorded might be fairly deduced from the remedy employed.

[In the two cases in which it was employed, permanganate of potass proved an unfavourable remedy. In the second case it was discontinued, and the report proceeds:]

On the seventeenth day from admission the urine passed was four quarts and a half, and the specific gravity 1039. The skin had become furfuraceous, and with very troublesome itching; the tongue continued red and glazed; much thirst and considerable flatus after eating, with distressing weight at præcordia, followed by gastralgia; the bowels had become sluggish. Saline draughts of the tartrate and phosphate of soda were given every morning. The diet remained the same, and he was ordered carbonate of ammonia, ten grains, with an ounce of infusion of prepared diosmæ every four hours, immediately after meals. The urine at this time contained 17·32 grains of sugar to the ounce; during the next six days the average specific gravity was 1039, and the daily quantity a little under four quarts.

On the thirtieth day from admission, and the thirteenth of taking the ammonia, the urine had diminished to a little more than three quarts; specific gravity, 1036, and the amount of sugar 9·13 grains to the ounce. There was much less thirst, and the tongue was moist, becoming dry only during sleep. The odour of the breath remained the same, and the urine, although containing less sugar, and of lower specific gravity, possessed the same briar-like aroma as on admission.

The phosphate of soda and ammonia in twenty grain doses was added to the carbonate, and five days afterwards the specific gravity of the urine was 1033, and one sample of urine gave 6·5 grains of sugar, and another of the next day 8·45 grains to the ounce. These were evident symptoms of improvement, and the patient believed himself getting well. His mother came up from Devonshire, and upon her urgent wish he returned home with her. The treatment by alkalies in the latter period of this case is exhibited in the most favourable light, and we are entitled to

infer that the smaller proportion of sugar, with concomitant indications of favourable progress, are to be deduced from the use of the alkali.

The next case, which was admitted in October of last year, also affords illustration of the advantage to be derived from an alkaline treatment, attention being at the same time paid to diet and regimen.

[Edward G., a carpenter, aged 48, was admitted in October, 1852, with the usual signs of aggravated diabetes.]

He was placed on carbonate of ammonia, ten grains; carbonate of potass, ten grains; and carui water, one ounce; to be taken after each meal. He had complained of some gastric uneasiness, flatulence, and eructations, while taking opium; these symptoms disappeared on taking the alkalies. The urine was at this time of a bright lemon-yellow, and, like the breath, exhaling an odour remarkably like chloroform, but not so powerful as on admission. The average daily quantity was seven and a half to eight quarts; twelve days after taking the alkaline remedies the urine was five quarts, and the specific gravity 1037, and the amount of sugar 7·53 grains to the ounce; crystals of oxalate of lime were detected by the microscope, and urea was recognised by nitric acid. The bowels were more regular; thirst much diminished, and had become less urgent even at night; the appetite was less craving, but there was no improvement in the physical strength of the patient. He continued the alkalies, with the addition of hard-boiled eggs to his diet, and fish on alternate days, for a further period of nine days, when the specific gravity of the urine was 1038, and the quantity of sugar on two examinations was 6 and 6·5 grains to the ounce. He fancied himself a little better, and as he had been above two months in the hospital, he was desirous of going home, and trying what such a change might do for him. He died three months afterwards, reported from gradual exhaustion.

It would appear from this case that agents which out of the body possess the property of arresting the chemical conversion of sugar, exercise no remedial agency within the organism,—at least so far as to diminish the quantity of sugar excreted. It must not be forgotten, however, that observations on a single case are necessarily inconclusive, and particularly as the case just related was one of extreme severity. The action of opiates was at first favourable; the relief to the more distressing symptoms of thirst was evident; the urine became less abundant in consequence, but there was no diminution in the major morbid conditions; emaciation continued, and large quantities, although less than before, of sugar continued to be excreted by the kidneys. The alkaline treatment furnished the most favourable results,—a gradual diminution in the daily amount of urine and a proportionate decrease in the quantity of sugar present. When he first came under treatment the daily average of sugar passed was 11.25 ounces; after the alkaline treatment it had become reduced to 3·66 ounces in the twenty-four hours. Even this lesser quantity is a large amount of solid sugar to be formed out of the alimentary matters, chiefly animal, taken by the patient. Nevertheless, the great reduction in the amount of fluid excreted, as well as of sugar, formed while under the influence of alkalies, and the larger share of improvement in all respects witnessed as compared with the results observed to follow the use of opium, justify us in placing great reliance on remedies of this class.

[In the next case, the patient left the hospital improved. Diaphoretics, warm baths, and subsequently hydrochloric acid, formed the basis of the treatment. The quantity of urine passed in the twenty-four hours, on admission, was about six quarts, specific gravity 1032. His age was 38.]

He was placed on a meat diet; a warm bath each alternate day; three grains of Dover's powder three times a day, and five grains of the same, with five of the antimonial powder, at bed-time; saline draughts of the phosphate of soda and tartrate of potash were given to regulate the bowels. He continued this treatment for a fortnight, with great advantage. The tongue became moist during the day, and the thirst much relieved, being for the most part troublesome only at night time. The bowels acted regularly. The specific gravity of the urine was reduced to 1026, and the presence of sugar, on one or two examinations, was very doubtful by Trommer's test; one sample contained a large proportion of urea. The branny exfoliation disappeared from the skin, and the surface of the body assumed a healthier appearance. Some dyspeptic symptoms, flatulent distension of the epigastrium, and gastrodynia, occurring, the antimonials and diaphoretics were discontinued; and he was ordered the dilute hydrochloric acid, in half-drachm doses, with compound infusion of orange-

peel, to be taken three times daily, a quarter of an hour before each meal; and yielding to his craving solicitation for bread, he was allowed six ounces daily. The dyspeptic symptoms disappeared; the tongue continued moist throughout the twenty-four hours. The urine averaged about three quarts: one day it was reduced to five pints, and the specific gravity was about 1025; the faintest indication of sugar by Trommer's test. Urea abounded in the urine, and the last two days of the patient's residence in the hospital a plentiful deposit of urates occurred. The patient appeared to have gained in flesh, and he represented himself to have acquired a good deal of his former vigour and activity. He showed himself once after he was discharged. His urine continued free from sugar.

[The connexion of glucosuria with gastric derangement would seem to be proved by the fact, that the remedies employed to remove the state of atonic dyspepsia diminished the quantity of sugar in the urine. John O., aged 20, was admitted Jan. 1850. His urine amounted to ten quarts daily;]

The bowels were regulated with salines. He was placed on a meat diet; warm baths every other day, and the soap-and-opium pill, in five grain doses, given night and morning. The opium affected the head so much that it was discontinued after the third day. He was then ordered fifteen grains of the carbonate of ammonia, three times a day, after each period of eating. The ward-book contains a daily register of the amount of urine, the specific gravity and the quantity of fluid drunk, and three calculations of the quantity of sugar present during the six weeks that he took no other remedy but the alkali. The following is an abstract:—For the first ten days the daily average amount of urine was five quarts; average specific gravity, 1037; average daily drink, four quarts; proportion of sugar, present in the ounce, seven grains. The symptoms remained the same. He had a warm bath twice a week. In the second period of ten days the daily average of urine was four quarts; specific gravity 1035; daily drink, three quarts; and sugar calculated at about eight grains to the ounce. The patient notwithstanding had improved; the thirst was much less distressing; a moisture from time to time appeared on the forehead and in the axilla, and he felt stronger, and the flatulence and dyspeptic symptoms were much abated. During the next period of ten days the mean daily amount of urine was reduced to three quarts: specific gravity 1030; mean daily drink was not recorded, the patient having twice forgotten to observe it; the amount of sugar had become reduced to three grains to the ounce. The patient's progress continued so satisfactory, that he was desirous of leaving the hospital to obtain a situation. He had gained much in bodily vigour; his appetite had become more natural; there were no unpleasant symptoms generated after eating; the bowels acted regularly; the tongue, although red, was clean and moist; and he stated that he had but little thirst, except when awaking from sleep, when he usually craved for water. The alkaline draughts were reduced to two daily, and he took four grains of the citrate of iron twice a-day. On taking the account of his symptoms during the last period of twelve days, the daily average of urine was three quarts; the specific gravity 1028; and the last sample of urine examined gave very doubtful results as to the presence of sugar. Urea was detected, and hydrochloric acid threw down, after standing a few hours, a pretty abundant crop of crystals of uric acid. This patient was lost sight of till the March of the following year, 1851, when he was again admitted. The symptoms of diabetes were as urgent as on his first admission, and in addition there were undoubted manifestations of tubercular disease in the lungs. There was dulness in the upper part of the right lung; bronchial respiration; strong vocal echo or resonance, and a copious expectoration of a yellow, muco-purulent, but frothy sputa. The urine contained sugar in abundance, and numerous crystals of oxalate of lime were observed by the microscope. The patient left the hospital before the end of the week, and was not seen afterwards.

From this last point of view the case suggests an interesting reflection on the relation between imperfect digestion and assimilation, the formation of an unhealthy plasma, and the development of the tubercular diathesis.

These cases illustrate the comparative value of certain remedies proposed for the treatment of diabetes. It may be objected that the cases are not sufficiently numerous to permit any very definite conclusion as to their relative value. This is certainly true; but it may be observed that these cases are intended to illustrate the effects of particular remedies in individual cases, rather than to determine absolutely

the positive value of any given plan of treatment. In this disease, accepting the amount of sugar excreted as constituting the essence of the malady, the object has been to ascertain the influence exercised in this respect by various medicinal agents.

Results.—[The principles upon which the remedies have been employed have been already expressed; and taking them in the order in which they have been classed, Dr. Basham finds that during the administration of the *permanganate of potass* in two cases, the quantity of sugar gradually increased. By those agents which were administered with the idea of retarding the conversion of the amylaceous elements of the food into sugar, *glycerine* and *sulphite of soda*, only negative results could be deduced. By *opium* and *opiates* the amount of sugar was not materially lessened. *Hydrochloric acid* seemed to be of use in one case. It should be taken some minutes before food.]

Diaphoretics. These may be administered in conjunction with opium. The suppressed function of the skin is so very evident in all cases of diabetes, becoming harsh, wrinkled, and furfuraceous, patients seldom perspiring, and relief being always apparent as soon as any moisture is obtained on the surface, that remedies which excite or assist in promoting cutaneous excretion are always more or less indicated. Opium itself tends to promote diaphoresis, even when given alone, and its action in this respect may be much increased by combining it with antimonials. Flannel clothing should be strictly enjoined. Several of these cases illustrate the advantage of warm baths in conjunction with these agents.

Ammonia and Alkalies. The testimony of almost all writers on this disease is in favour of the remedial power of alkalies, particularly of the carbonate of ammonia; and the cases detailed corroborate the opinions of the most experienced physicians on their efficacy. One case presented the most satisfactory proofs of this plan of treatment, as the patient left the hospital temporarily cured. Of the mode of action of alkalies in this disease, little is known beyond what is hypothetical. Mialhe states that the blood in diabetes is deficient in alkaline salts; and he affirms that the ultimate conversion of the sugar formed out of the food, into products capable of being eliminated by the respiratory function, is not effected in consequence of the deficiency. To supply this defect should be the leading principle in the treatment of glucosuria. Whether we adopt this theory or not the fact remains indisputable, that a larger amount of relief is obtained by a steady and persevering use of ammonia and alkaline salts than can be procured by any other class of remedies. However, to render them efficient a well-regulated diet must be rigidly followed, and this should be limited as much as possible to animal or nitrogenous food. In the opinion of Bouchardat, clothing ranks next to diet. Moreover, the intelligent co-operation of the patient is absolutely necessary; for, unless he can be made to understand and enter into the object for which so strict a diet is prescribed, the effects of the alkaline plan of treatment will prove uncertain and unsatisfactory. The progress of cases in private practice is for the most part always more satisfactory than among hospital patients, principally for this reason, that intelligence lends force to the efforts of self-denial, and developes a more powerful control over the appetites and habits: the less educated are but little inclined to abstain even from things which they know to be positively injurious, and they with difficulty can be brought to comprehend the necessity for refraining from bread and vegetables, which their necessities have always taught them to be the staple articles of their food.

I cannot take leave of this subject of diabetes without referring to Dr. Hassall's very valuable paper, in the 'Medico-Chirurgical Transactions,' on the Development of Torulæ in the Urine. When sugar is present in urine in smaller quantities than can be detected by the action of chemical reagents, he has shown that the sporules of the sugar fungus, or even a higher stage of development, may be readily detected by the microscope.—*Lancet, Jan.* 21 *and* 28, *pp.* 66, 96.

68.—*Diabetes treated by Alkalies.*—Sir H. Marsh, Bt., says: "Amongst the agents capable of controlling the saccharine diathesis may be enumerated the alkalies. Of these, that which I have found the most useful is a combination of lime water, ammonia, and soda, given about an hour after each meal. Years ago I met the late Dr. Colles in consultation. The case was a severe one of diabetes; I asked

him what he would propose to give. He replied lime water and hartshorn. I asked him on what principle he proposed the remedy? His answer was: 'I know nothing about the principle, but I know the fact, that it does more good than any other medicine.' And so it did in the case we consulted about. I state the answer in his own words because it was so characteristic of that eminent man whose departure from amongst us we have all had such reason to deplore. In the observation, memory, and application of facts he greatly excelled."—*Dublin Quarterly Journal, Feb.* 1854, *p.* 7.

69.—*Treatment of Diabetes Mellitus by Rennet.* By Dr. H. Fearnside, Physician to the Preston Dispensary.—[Dr. Gray, of Glasgow, mentions the use of rennet in this disease, and speaks from his experience of it in three cases very favourably. Dr. Fearnside was induced from these remarks to try it in the following case:]

Mrs. H., a tall, spare woman, aged 55 years, had suffered from bad health for some time, without being able to indicate the existence of any special ailment. She had lost strength and flesh, and for some months before she fell under my notice, her debility had increased so much that it was with difficulty that she attended to her ordinary domestic duties. For a considerable time she had remarked that the quantity of urine passed was excessive, and she had been harassed by constant thirst. When I first saw her the expression of the countenance was haggard and anxious; the skin was hot and dry; the pulse quick; the tongue was loaded with a yellow fur; she complained of inodorous eructations, heartburn, and flatulence; the bowels were confined; the thirst inordinate. There was great muscular weakness, and severe pains in the back and limbs. The quantity of urine passed in twenty-four hours was five quarts; it was acid; specific gravity 1046, and gave evidence on the application of the potash and copper tests of containing sugar.

After the use of some gentle aperient medicine, the diluted mineral and hydrocyanic acids were prescribed, and with more or less regularity, were taken for some months. The diet was strictly limited to butcher-meat, fish, eggs, milk, and bran-bread. Fresh vegetables, as cabbages, were taken occasionally. Brandy and water was allowed as a beverage. A dose of rennet was taken after each meal.

A fortnight after the adoption of this plan, the patient became so conscious of its good effects, that notwithstanding the vigorous exercise of self-denial which is required, no further exhortations from me were needed to ensure its steady employment. The digestion improved, the thirst subsided: the quantity of urine passed in twenty-four hours fell from five quarts to two quarts, and eventually to three pints, and its specific gravity descended in three months from 1046 to 1020. It has now for some months been free from sugar, although the patient has cautiously and gradually returned to her ordinary mode of life. She has recovered in a considerable degree her strength, but remains spare and thin.—*Monthly Journal of Med. Science, March*, 1854, *p.* 252.

70.—ON THE CHARACTERS OF URINE DEPOSITING OXALATE OF LIME.

By Dr. Douglas Maclagan, F.R.S.E., &c.

[After giving an elaborate table of thirty-four cases of this kind of urine, Dr. Maclagan observes:]

The principal characters which have been noticed as belonging to urine containing oxalates, are the following:—(1.) A density somewhat higher than natural, indicating an excessive elimination of urea, or of the indeterminate extractive matters of the urine. In the series of cases recorded by Dr. Golding Bird, one-half of the specimens ranged from 1015 to 1025. Some were as low as 1009; some as high as 1030. In the cases recorded by Dr. J. W. Begbie (Monthly Journal, March, 1848), the average density was 1028; the extremes being from below 1015 to above 1030, and in one case 1040. Dr. Prout states, in general terms, that the urine in such cases is of moderate density. (2.) A colour, according to Dr. Prout, pale citron yellow, or greenish; according to Golding Bird, amber, never greenish; according to Dr. Begbie, amber, darker than in health. (3.) An odour generally natural, rarely aro-

matic, like mignonette (Golding Bird); on the other hand, aromatic, occasionally approaching to that of the sweet-briar, noticed in urine containing the cystic oxide (J. W. Begbie). (4.) A reaction almost always more or less acid, frequently powerfully so.

Very contradictory opinions have been expressed regarding the pathological importance of the oxalate of lime in the urine. On one hand, we are told of the "miseries which flow from the oxalic diathesis,"—that from it sometimes the bodily suffering is considerable, and the mental excitement verges on insanity,"—that "it is so generally important in its pathological bearings that it merits special attention." On the other hand, it is as confidently affirmed, that "oxalate of lime scarcely indicates a more serious derangement of the bodily health than a deposit of urate of ammonia does,"—and that to "set up such a diathesis as the oxalic is unreasonable, and contrary to the spirit of rational medicine." As usual in cases of such discrepancy of opinion, the truth will probably be found to lie between the two extremes. It does appear to me that, pathologically speaking, too much has been made of the expression, oxalic diathesis. Invested as the subject is with all the interest of a zoo-chemical question, its designation of oxalic diathesis leads, I suspect, though it does not directly express it, too much to fix attention upon the mere idea of an inveterate tendency on the part of the elements of the food, or the elements of the tissues, to undergo a certain abnormal chemical metamorphosis, and excludes too much from view what is the really important question,—can we attain to any knowledge of the cause why such an abnormal chemical change should occur at all? The objection to the phrase oxalic diathesis appears to me to be, not that it involves an erroneous pathological theory, but that it is no theory at all. It is the mere expression of the fact, that, in a certain class of cases, oxalate of lime does occur in the urine in large quantity, and often for a considerable length of time: it gives no enlightenment as to the reasons why this should be the fact. The same is true of the expressions lithic and phosphatic diathesis. When we have got the length of designating certain cases by these names, and when we have by the usual process of chemical formulation shown *how* oxalic, uric, and phosphoric acid compounds can be formed in the body, we have not, I apprehend, made out their pathology. We have only cleared the ground so far as to reach the point of inquiry,—*Why* in three cases where the nutritive function is perverted, shall a series of actions be set up which shall lead in A, to the deposit of oxalate of lime; in B, of uric acid; and in C, of phosphatic salts from the urine? It is only when these questions are settled that we shall be able to say that we know what is really meant by the expression oxalic, uric, or phosphatic diathesis.

I have been much struck in the perusal of the standard works and memoirs on this subject with the circumstance, that while it is generally stated that the exciting causes of the disease are easily traced, comparatively little attempt has been made to impress the reader with the importance of paying attention to these exciting causes; and yet I believe that an attention to them is of more importance than any thing else, as a guide both towards proper discrimination and successful treatment of such cases. If there be anything more established than another regarding well-marked oxalic urine it is this, that it always is accompanied by a train of symptoms which points very decidedly to something wrong in the nervous system. Languor, inaptitude for the performance of duty or enjoyment of recreation, fretfulness, and hypochondriasis, are among the phenomena which are presented. Now, it seems to me to be an essential point to come to some understanding, as to whether these precede or follow the formation of oxalic acid in the system, whether they are, in whole or in part, its effects or its cause? It is, perhaps, not easy to determine this. Patients often do not come under medical treatment until both these phenomena are in full activity, and the history of the case does not always enable us to form any plausible opinion on this point. But it will, I think, generally be found, that when good information is afforded us as to the previous history of the patient, his ailments can be traced to something which would tend to impair the energy of his nervous system, or something which entailed upon it too great tear and wear; and which in either case prevented it from duly performing its duty of regulating and controlling the organic functions. For example, the exhaustion of the system by recent acute disease, as pointed out by Dr. Walshe, or long-continued chronic disease of some other kind, especially if involving the organs of digestion; or direct injury or organic

disease of the nervous centres may be the cause in one set of cases,—whilst, in another set, either too sedulous an application to business, or mental distress and anxiety, or, perhaps, even the want of some healthy mental stimulus, may be the origin of this state of the nervous system. If this should prove to be true, then certainly there is no necessity for the assumption of a special diathesis, and that which we designate the oxalic diathesis would resolve itself into this,—a state of the nervous system, under which the organic functions become unduly performed, and in which, among other morbid phenomena, physical and psychical, gradually becoming aggravated as the case proceeds, some of the elements of nutrition are mal-assimilated, and along with the effete matters of the tissues, pass out of the system in the form of oxalic acid, instead of being carried off in some more normal state of combination. This is essentially the doctrine of Lehmann, who, though undoubtedly speaking rather with the authority of a chemist than of a physician, appears to have taken the right view of the cause of the occurrence of the oxalate, in ascribing it to a want of proper agency in the nervous system. It has always appeared to me a more feasible doctrine, than to regard the oxalate as a poison in the blood generated by an unexplained diathesis, and producing all those morbid phenomena in the nervous system. But to admit this is quite a different thing from going so far as to maintain with him and some English authors, that there is no essential connection between the oxalates and the symptoms which accompany them; and that the formation of oxalate is of little pathological importance. But it is needless to argue this question, as it appears to have been satisfactorily answered by Dr. Golding Bird.

I apprehend that if functional inefficiency in the nervous system be in any way recognised as a cause of the formation of the oxalates, it must be by its exerting an injurious effect on the respiratory function. By this is to be understood not any interference with the free ingress of air to the lungs, although this, when it occurs, appears occasionally to lead to the formation of oxalates, as in chronic bronchitis and pulmonary emphysema, but a disorder of the great respiratory function throughout the system, the oxygenation of the calorific elements of food and of effete matter of tissues. Now, the hypothesis which appears best to meet the case is, that from deficient innervation, the vital force and self-preservative power of the tissues is impaired; their waste goes on at an unnatural rate, and, perhaps, in an irregular manner; and that hence arise the increase of urea and extractive in the urine, and the emaciation and debility which characterise the disease when fully developed. But as under these circumstances, the oxygen of the blood is used up in wasting the tissues, there is not enough of it adequately to consume the calorific elements of the food, and hence some of the carbon, especially that which is taken in the form of such respiratory elements as sugar, &c., which ought to have passed off into carbonic acid, is only oxidised so far as to form oxalic acid. It is not unworthy of recollection in relation to this view, that the over indulgence in sugar is one of the commonest causes of keeping up, and its avoidance one of the most important means of diminishing, the excretion of oxalic acid by the kidneys. Nor does this view infer the revival of the idea that there is any relation between oxaluria and diabetes, and that the one tends to pass into the other. There does not seem to be the least evidence of this. The greater part of the oxalic acid, therefore, is probably furnished by the mal-assimilated unazotized elements of the food, but there seems no reason to doubt that mal-assimilated nitrogenous matters likewise contribute towards its formation, because oxalates continue to be deposited in quantity from the urine when the use of unazotized food is very much restricted. In this case we may accept the doctrine of Bird, that the nitrogenized food is first converted into urea, or, as Liebig would have it, into uric acid, both of which are known, under decomposing agencies, readily to yield some oxalic acid along with other products.

I apprehend that the train of dyspeptic symptoms which occupy generally the most prominent place in the patient's complaints, are also to be ascribed to defective nervous agency. Dr. Prout long ago pointed out that the reducing function of the stomach is impaired in cases of this kind, and this may, I think, be interpreted as meaning that the muscular power of that organ is defective. The stomach symptoms, complained of by patients with oxalic urine, point more to this than to a vitiated state of the gastric secretions. Heartburn, the raw feeling of acid in the

throat, pyrosis and fœtid breath, according to my observations, present themselves less frequently; whilst flatulence, a sense of weight after meals, often referred to the pyloric region, and lasting for two or three hours after an ordinary meal, are more commonly experienced. In short, the phenomena are rather those of sluggish and imperfect than of vitiated *concoctio ciborum*, although when the mechanical action of the stomach is imperfect, it is likely that its chemical action will be also to some extent impaired; and I suspect that many cases which have been described by less recent writers as examples of retarded digestion, would by proper examination have been shown to be examples of oxalic urine. In a great many instances, the symptoms are only those referrible to the stomach, the illness not having advanced so far as to present the emaciation, hypochondriasis, &c., which characterise fully developed cases. There seems a disposition on the part of some medical men to draw a distinction between these two sets of patients, and I have heard them contrasted as being respectively cases of dyspepsia with oxalates in the urine, and cases of the oxalic diathesis. There does not seem to be any foundation for such distinctions; they differ from each other only in degree or progress; the stomach symptoms generally occur first, and if they are made the subject of timeous treatment, and if the exciting cause, be it what it may, is removed, they generally go no further; but if not attended to, or if made the subject merely of medical treatment, without due attention being given to the cause which has impaired the nervous energy, then the emaciation, weakness, and constitutional nervous symptoms follow. I certainly have not been able to make out by my observation, any such distinctions among cases of oxalic urine, as would entitle me to place them, upon any grounds, in distinct categories, although this has, in relation to the amount of urea, been sanctioned by the authority of Dr. Golding Bird. I have never been able to make out any difference except in degree of development of the symptoms.

Little need be said as to the general result of cases of oxalic urine. Except when connected with or dependent upon organic or other intractable disease, it is in general not difficult of cure. I believe the most essential part of the treatment, as regards a final cure, to be hygienic, and that our most strenuous efforts ought to be directed towards detecting the causes which may have given rise to the patient's ailments, and insisting upon their removal. If these be unattended to, or if they be beyond our control, the treatment by medicine will be little better than palliative, and a recurrence of the complaints may be anticipated. Hence the recognised importance in all cases of protracted dyspepsia of ascertaining as accurately as possible the whole facts of the patient's habits and occupations. (The examination of the urine, though never to be neglected, is, perhaps, even of less importance.) It is unnecessary to cite in illustration of this the necessity for getting rid of such causes of functional disorder as intemperance, eating at irregular or unsuitable hours, making undue exertion immediately after meals, over-excitement by business or pleasure, &c. Where there co-exists some separate disease, it must be sought to be removed by its own appropriate remedies. The ground being cleared in this way, the treatment of the case is in general simple enough. It may be comprised under the heads of stomachic remedies, mineral acids, and regulation of the diet. When the complaint has not proceeded farther than to constitute a mere case of dyspepsia, the ordinary stomachics will in general suffice. Rhubarb and dried carbonate of soda, with the addition of calumba when the appetite is bad, appear to be generally useful. Bismuth may be advantageously conjoined, where there is gastrodynia occurring generally when the stomach is empty. When the gastrodynia does not occur with an empty stomach, but comes on immediately or soon after taking food, and especially if it be conjoined with epigastric tenderness and tendency to vomit, much benefit is generally found to accrue from the use of a mixture containing in each dose two or three minims of hydrocyanic acid, ten or twelve minims of aqua potassæ, and a drachm of tincture of calumba, and if the gastritic tendency is very marked, which is, however, seldom the case, a sinapism may be applied to the epigastrium, at intervals of two or three days, according as the skin will bear it.

Laxative medicines in general are not much called for, and should be used sparingly. For mere torpidity of the bowels enemata of simple warm water will suffice. Where there seems reason to believe that the liver is congested, or not secreting properly, equal parts of the compound rhubarb and blue pill, in doses of five or ten

grains, answers well. I generally have considered the occurrence of purpurine in the urine to be a good indication of such a laxative. (Dr. Golding Bird's valuable observations on purpurine do not appear to me to have met with the attention which they deserve. I refer to his work for the characters of this deposit.) A very useful laxative, and at the same time an excellent stomachic, when the digestion appears to be very slow, is a pill containing one or two grains of Barbadoes aloes and half a grain of the alcoholic extract of nux vomica.

The employment of the mineral acids, chiefly nitro-muriatic acid, has received the general approval of those who have written on this subject. It is not required, nor is it beneficial in the merely dyspeptic cases, but is of great value in the more advanced forms of the complaint. The chief indications for the use of the acid are, general weakness, nervousness, and loss of flesh, with a clammy state of the skin, more especially when the urine is of high density. It is apt to produce uneasiness in the epigastrium and dry cough, when the stomach is irritable, and, under these circumstances, may be intermitted, or replaced by hydrocyanic acid. Occasional diarrhœa does not contra-indicate the use of the nitro muriatic-acid; on the contrary, I have seen it much ameliorated by, or at least during, its use. When the appetite is feeble, and dyspepsia much complained of, it is best given with some bitter. Infusion of serpentaria is generally not disliked by patients, and answers well in all cases of dyspepsia, whether with oxalic urine or not, where there is a tendency to nervousness. Where the appetite is very bad, the patient is nervous and depressed, and at the same time sleeps ill, I have thought that advantage was obtained from making the bitter infusion with some such proportions as, 3 iij. serpentaria, 3 ij. of gentian, and 3 ij. of hop to a pint of boiling water. In considering the *modus operandi* of the nitro-muriatic acid, it is naturally suggested to the mind that both nitric and muriatic acids are solvents of oxalate of lime; but a very short reflection will show that its value does not depend upon any such chemical power; first, because there is no proof that any such acid can in a free state reach the kidneys where the oxalate is eliminated; secondly, that it appears to be pretty nearly established that the oxalate is in a state of solution when excreted, and therefore requires no solvent; and thirdly, if its action were of this chemical nature, there would be no reason for the preference given by universal consent to nitro-muriatic acid, as either of its constituents is of itself a perfectly good solvent of the oxalate. The true action of the acid I conceive to be that of moderating the waste of the tissues, and so saving the patient's strength. It acts, I presume, by virtue of that power over the capillary system, whatever it may be, which enables the mineral acids to act as refrigerants, and to check sweating. I have generally used the nitro-muriatic acid, but I confess more in compliance with the authority of others, than from any settled conviction that it is superior to simple nitric acid.

In relation both to the dyspeptic and general symptoms, however, the regulation of the diet is of more consequence than the administration of medicine, and is exceeded in importance only by the removal of any habit or mode of life which may be regarded as the originating cause of the disorder. In fact, errors in diet are in themselves frequently the sole cause which we require to remove. The established rule for dyspeptic patients is, "well-cooked, digestible food," but to be successful in the dietetical management of such cases, we require to be a little more precise. The statement of Dr. Prout in favour of "the French cookery, by which animal and other matters are reduced to a semi-fluid or pultaceous mass," has not I believe been sufficiently appreciated by medical men, and certainly has not in this country obtained much influence with the laity. The doctrine promulgated by certain pseudo-philosophers that modern cookery is a system of pleasing the palate at the expense of the stomach, has a strong hold on the public mind. Dyspeptic patients often complain very dolorously that their stomach will not do its duty, although they have, for its special relief, carefully refrained from all *entrées*, and confined themselves to plain steak and chop, roast and boiled; and it requires some argument to persuade them that we are in earnest when we tell them actually to reverse their proceedings, and to betake themselves to those very articles which they reject as "dressed dishes." In estimating the dietetical qualities of different kinds of food, too much consideration is given to the kind of meat which may be used, and too little attention is paid to the mechanical condition in which it is served. This may in great measure be left to choice, provided the form of preparation be appropriate.

In order to point out the appropriate form, it is not necessary that the physician should be an adept in cookery. Unless his patient be very unintelligent, it will commonly be enough to lay down the general rule that whatever approaches nearest to the soft solid consistence will answer best. Minced meats of different kinds, which may be varied in many forms, from the homely "minced collops" of Scotland to the more recondite performances which constitute the side dishes at every dinner party, sweetbreads, white fish, &c., make up a diet-table in which there is ample room for selection, and by which the interest of the stomach and the pleasing of the palate may easily be reconciled. It has often been urged upon me in reply to such recommendations, that they require for their accomplishment a better cook, and infer a more expensive style of housekeeping, than the patient's establishment affords. This, I am very sure, is a complete mistake, for I know that, when duly insisted on, all that is requisite can be obtained in families of the most moderate means and humble pretensions. Lehmann, in commenting on the much more frequent observation of oxalate of lime in the urine, in England than on the continent, ascribes it to the larger average density of the urine in England than in Germany or France, the oxalate being more rapidly deposited from a concentrated than an aqueous urine, and this higher density he accounts for chiefly by the assumed fact that much more animal food is eaten in England than in the other countries. "From statistical data it appears that any given number of Londoners eat six times as much animal food as an equal number of Parisians." But it appears to me that a better explanation can be found than in the mere proportions of animal and vegetable food consumed. Vegetable substances are not a whit less likely to furnish oxalic acid, where the dyspepsia exists, than animal food. On the contrary, many vegetables, such as sorrel, much used in France, it is well known, absolutely send oxalate of lime into the urine without giving rise to any ailment, because they contain the oxalic acid ready formed. The reason why oxalic urine has been more observed in this country is, that the dyspepsia which causes it to be looked for is more frequent, and I believe that this is rather to be ascribed to the national addiction to solid masses of meat than to any sixfold carnivorous propensity. The nearer we approach to French cookery the less I believe shall we encounter this form of urinary deposit.—*Monthly Journal of Medical Science, Dec.* 1853, *p.* 473.

71.—ON THE TREATMENT OF OXALURIA.

By Dr. James Gray, Glasgow.

[The terms oxaluria and oxalic acid diathesis are now well understood to mean that morbid state of the digestive and assimilative functions in which oxalic acid is eliminated by the kidney in combination with urine. It is by no means an uncommon complaint. The prevailing forms of the crystals are the octohedral and the dumb-bell. It is at present believed that the former consists of the *oxalate*, and the latter of the *oxalurate*, of lime; and this is likely, because therapeutic agents do not act alike in both cases. Dr. Gray, in this paper, endeavours to show the value of the nitrate of silver in cases where the dumb-bell form is present.]

Case 1.—James Fleck, aged 48, of a melancholic temperament, married, by trade a cooper; came under my care on the 3rd of Aug. 1851, complaining of intense pain in the epigastric region, so severe as to render him wholly unfit for his work. He attributes the first of his present illness to a debauch about three years ago, up to which time his general health had been good.

When I saw him he had a very haggard and emaciated appearance; skin of a greenish-yellow colour, tongue red, pulse regular, but weak. Complains of excruciating pain in the region of the stomach, both before and after taking food. This pain comes on in paroxysms, and is frequently attended with vomiting; the matter vomited has a dark grumous appearance. During the paroxysm the skin is cold and bedewed with moisture. Bowels confined, fæces of a dark colour; has occasional pains over the renal region. *To take a mild aperient, and a wine-glassful of calumba infusion thrice daily.*

5th. No change for the better, pain still as severe. Is greatly depressed, and under the impression that he is consumptive and dying. This morning's urine has a dark amber colour, acid, specific gravity 1030, contains a large excess of urea; under

the microscope, numerous octohedral crystals of the oxalate of lime, mixed with epithelial scales in great numbers, are visible. *To have a nutritious diet, to abstain from spirituous liquors, to sponge the body every morning with tepid water, and to take a teaspoonful of the following mixture every six hours;—Tincture of calumba,* ℥ *ij; nitric acid and muriatic acid āā* ℥*ss.*

8th. Greatly improved in appearance. He is now quite free from pain, is in better spirits, and takes his food with greater relish.

He went to the country shortly after this, and returned to his work about the beginning of November perfectly well.

On the 15th of Feb. following, he returned to me with all his former symptoms aggravated; which he attributed to irregularity in diet and exposure to cold. On examining the urine it was found to contain the oxalate of lime in dumb-bell crystals.

He was ordered to take a mild aperient, and the acidulated tincture of calumba as before.

18th Feb. Bowels freely moved, no improvement, passed a very bad night. *Ten drops wine of colchicum every six hours, and ¼ grain sulphate of zinc, night and morning.*

22nd. Much the same, is evidently weaker and more emaciated, can take no food, greatly depressed in spirits. *One grain nitrate of silver every six hours.*

24th. Felt greatly relieved after taking the first dose of the nitrate of silver, is now improved in appearance. The paroxysms are less frequent and not so severe. This morning's urine contains the oxalate of lime in octohedral and dumb-bell crystals. *Continue the nitrate of silver in ¼ grain doses; a teaspoonful of the acidulated tincture of calumba night and morning.*

March 3rd. Decidedly improved. The dumb-bell crystals have disappeared from the urine. *Omit the nitrate of silver and continue the mixture.*

April 10th. No trace of the oxalate of lime in the urine. He feels quite well, and has again resumed his work.

On the 3rd of Dec. last I was called to see him. I found him in bed, perfectly prostrated, with a small thready pulse, weak tremulous voice, skin cold and clammy, features contracted, countenance expressive of intense pain, low moaning, tossing of the arms, breathing slow, tongue white and coated. I learned that while at work this morning the pain had returned, and that he was induced by a fellow-workman to take two glasses of whisky, which increased the pain and brought on vomiting. *Sinapism to the epigastric region, warm drinks, and bottles of hot water round the body.*

The urine, on examination, was found to contain myriads of dumb-bell shaped crystals of the oxalate of lime, mixed with uric acid. *Nitrate of silver in grain doses every four hours.*

4th. Pulse fuller, no decided improvement in the other symptoms.

7th. Has improved greatly. The pain has now all but left him. *Continue the nitrate of silver in ¼ grain doses three times a-day.*

On the 14th he went to the country, and returned to his work on the 27th. Up to this time he continues well.

Case 2.—On the 29th of April, 1852, I was consulted by J. R., aged 23, of a nervous temperament. He has been ailing more or less for the last nine months. Complains of pain and difficulty in swallowing, harassing cough, with roughness at the upper part of the larynx. When the cough is severe, the expectoration is tinged with blood: no appetite, bowels constipated, great weakness and emaciation, tonsils enlarged, and fauces considerably inflamed, tongue slightly coated. Percussion elicits a normal sound over the whole chest.

A strong solution of the nitrate of silver was applied to the upper part of the larynx and fauces, and he was ordered a mild laxative.

30th. The urine contains an excess of urea, and oxalate of lime in octohedral crystals. *A teaspoonful of the acidulated tincture of calumba three times a-day.*

He went to the country shortly after this, and returned about the beginning of June, so much improved as to be able to resume his duties. No trace of the oxalate could be detected after his return, and with the exception of a few days' confinement to his room from an attack of "*cynanche tonsillaris*," he has since then enjoyed good health.

Case 3.—J. M'Intosh, aged 25, ship cooper, came under my care on the 2nd Jan.

1852. From his history it appears that when at Georgetown, Demerara, he was very irregular and intemperate in his habits, that on the voyage home he was attacked with sickness, vomiting, headache, and loss of appetite, by which he was greatly reduced in strength, and confined to his berth for the greater part of the voyage, and since his return on the 18th of Nov. 1851, he has been confined to bed.

Complains of great feebleness, and of daily becoming weaker. The countenance is wan, and expressive of great anxiety. Tongue coated posteriorly, red at the point and edges; has no desire for food, and what he does take is often rejected, bowels loose, severe spasmodic cough, respiratory murmur healthy; profuse perspiration, particularly at night, and after awakening from sleep; pulse 120, weak and small, heart's action normal, urine of a dark amber colour, density 1035, contains oxalate of lime in octohedral crystals, with a large quantity of the urate of ammonia. *A mild nutritious diet, tepid sponging night and morning, a teaspoonful of the acidulated tincture of calumba every four hours.*

Under this course of treatment he continued to improve daily. About the 1st of Feb. he went for a few weeks to the country; on his return no trace of the oxalate of lime could be detected. Since then he has enjoyed good health.

Case 4.—John Anderson, aged 34, nervous temperament, by trade a cabinet-maker, consulted me on the 6th of July, 1852, for what he conceived to be an affection of the stomach. He informed me that about the middle of April preceding he began to lose his appetite, had slight pain in, and distension of the stomach, frequently accompanied by heartburn, palpitation of the heart, and pain in the loins. When he called on me in July these symptoms were considerably aggravated; his pulse was 84, strong and full, the slightest excitement caused palpitation of the heart, and severe headache. He has no appetite for food, which when taken causes pain in the stomach, flatulence, and sometimes vomiting. Bowels confined, urine of a pale yellow colour, specific gravity 1042, contains oxalate of lime in octohedral and dumb-bell shaped crystals; a small quantity of urate of ammonia and epithelial scales. *Acidulated tinct. of calumba every four hours, a grain of nitrate of silver night and morning, tepid bath, and to abstain from vegetable food.*

He continued his course of treatment for five weeks, when the oxalate of lime entirely disappeared from the urine, the specific gravity fell to 1020, and he felt quite well. Since then I have not seen him.

Case 5.—On the 13th Jan. 1853, I was consulted in the case of J. M., aged 43, melancholic temperament. From his history it appears that in Jan. 1852, he had an attack of jaundice, accompanied by vomiting and pain in the stomach. The jaundiced appearance disappeared about the beginning of April; the vomiting and pain in the stomach, however, continued, but in a modified degree; towards the end of April a small tumour made its appearance in the epigastric region. Up to this date he has been gradually getting weaker and more emaciated, and for several weeks back he has been unable to leave his bed.

When I first saw him his complexion was of a dark yellow hue, and emaciation very great. He complains of intense pain in the stomach, which comes on in paroxysms, and generally causes sickness and vomiting, after which he experiences partial relief; the matter ejected has a dark coffee colour. Tongue coated posteriorly, and red at the point; bowels confined; pulse 106, small and weak, breathing slow but regular; has occasionally a pain in the loins, and along the anterior and inner side of the thighs and legs. On examination I found a tumour extending from the scrobiculus cordis downwards, to the extent of five inches, and on either side of the linea alba three inches. For several nights back he has been very restless, and unable to procure sleep. This morning's urine has a dark brown colour, specific gravity 1038, it contains mucus, epithelial scales, urate of ammonia, and oxalate of lime in dumb-bell crystals. *Nitrate of silver in ½ grain doses every six hours, friction to the skin, and light nutritious food.*

19th. Can now retain his food, looks more cheerful, the abdominal tumour is considerably reduced in size, the urine is not so high in colour or density, still contains oxalate of lime.

27th. The abdominal tumour has entirely disappeared, which seems to have depended upon spasmodic contraction of the upper division of the rectus abdominis, feels stronger, and is able to take his food with relish.

Feb. 14. The oxalate of lime has entirely disappeared, he is now able to take a little exercise. *Continue the nitrate of silver, night and morning.*

On the 22nd he went to the country, where he still remains. When I last heard from him (on May 4th), his general health had greatly improved, and he felt nearly as strong as before his first illness.

Remarks.—1. From the history of these cases it will be observed that the most prominent symptoms were the epigastric pain, vomiting and emaciation; indeed the emaciation in the first and last cases was so great as to resemble the emaciation in the last stage of scirrhous pylorus. In all, but particularly in the first and last cases, the symptoms and appearances of poisoning by oxalic acid were well marked, which led me to examine the egesta for this poison, but I could detect none. In such cases as the preceding, guided solely by the symptoms, we should most certainly form an erroneous diagnosis; and here the value of microscopic, as well as chemical analysis of the urine, becomes apparent. The symptoms should not, however, in any case be undervalued; but when we can with certainty, and by a simple process, discover the cause which produces certain symptoms, we can with more confidence select the proper therapeutic agent. We, moreover, observe from these, that in all cases where the oxalate of lime is in octohedral crystals, the nitro-muriatic acid, combined with a vegetable tonic, will in most, if not in all cases, effect a cure.

2. That in those cases where the crystals assume the dumb-bell form, nitrate of silver appears to be particularly serviceable.

3. That when both kinds of crystals are present, these medicines should be given alternately.

The internal use of nitrate of silver has been generally objected to, from the effect it produces on the skin. I have frequently given in repeated doses of one grain, as much as 60 grains, without producing any discoloration.—*Glasgow Med. Journal, Oct.* 1853, *p.* 311.

72.—ON MORBID CONDITIONS OF THE URINE CONNECTED WITH CHRONIC DISEASE.—INDIGESTION.

By Dr. H. Bence Jones, F.R.S., &c.

[Some time ago Dr. Bence Jones pointed out that frequently in a healthy person, when much acid exists in the stomach, the urine becomes alkaline. It becomes thick when boiled, but clears with nitric acid. This alkaline state of the urine is often caused by an irritable stomach, that is, *indigestion*, owing to insufficient air and exercise. It is not permanent, but varies in the same day, and exists only or chiefly when the stomach contains acid.]

The indications for treatment of *alkalescence from fixed alkali* are:—

1st. To remove the cause; that is, to lessen the irritability of the stomach.

2ndly. To correct the state of the urine.

In the slight form of the disorder which probably is frequently to be met with in many of us, little or no medical treatment is requisite. Less work, more air and exercise, mild, unirritating, nutritious food, will remove the alkalescence, which for the most part can be found by emptying the bladder directly after breakfast, and again in two hours.

In severe cases, acids and tonics are indicated.

Of acids, the vegetable acids are most efficacious in correcting the state of the urine. They can be taken in larger quantities than the mineral acids, the intensely acid taste of which prevents a great increase in the dose.

The most frequent method of giving vegetable acid is in lemon juice, which has no definite composition. The specific gravity of one specimen I found was 1038·4; another, 1036·0; a third, 1037·9. Supposing that half an ounce saturates a scruple of carbonate of potash, then seventeen grains of dry citric acid are equivalent to half an ounce of lemon-juice. Each lemon contains about an ounce of lemon-juice, so that a lemon is equivalent to about thirty-four grains of citric acid, and twelve ounces of lemon-juice would equal six drachms, two scruples, eight grains of citric acid, or 408 grains. Now, I have found by experiment that this quantity of lemon-juice, taken in two doses of six ounces each dose, repeated in three hours, did not cause any pain in the bowels, and it occasioned very little uneasiness to the stomach, which

was empty when the first dose was taken. It very decidedly increased the acidity of the urine, and it distinctly precipitated uric acid when the urine stood for some hours. This may be considered as resembling the effect of about 408 grains of citric acid in twelve ounces of water. Tartaric acid was taken dissolved in distilled water, in two doses of fifty-four grains each, in an hour and a quarter, without any uneasiness, but it caused very considerable pain in one hour. The pain, which was marked intermitting at short intervals, lasted nearly three hours. Then the bowels were inclined to act, but no action took place. This was the effect of 108 grains of tartaric acid. A second experiment, in which 162 grains were taken in an hour and three-quarters, caused the same symptoms. The acidity of the urine was considerably increased.

It is probable from these experiments, that—

1. The solution of tartaric acid was not absorbed from the stomach, but passed into the intestines, and would have passed, partly at least, through them. 2. That the stomach is less sensitive than the intestines. The pain was not felt in the stomach, but was very severe in the bowels. 3. Tartaric acid is more than twice as irritating as citric acid in lemon-juice. The quantity of potassa in lemon-juice is too small to produce any very decided neutralising effect, the total ash in an ounce of juice being less than a grain and three quarters.

[But there is another kind of alkaline urine, viz., that from volatile alkali, the first being from fixed alkali.]

The *alkalescence from volatile alkali*, whether caused by injury of the spinal cord, or from any other cause, owes its origin generally, if not always, to inflammation of the mucous membrane of the urinary organs. This gives rise to altered mucus and pus. The mucus determines the decomposition of the urea, changing it into carbonate of ammonia, which neutralises the acidity of the urine, and finally precipitates the phosphate of lime, and forms phosphate of ammonia and magnesia, which afterwards crystallises out. The carbonate of ammonia lastly acts on the mucus and pus globules, making them adhesive, and forming the so-called ropy mucus, or, as it often had better be called, ropy pus, which is seen by the microscope to consist of crystals of phosphate of ammonia and magnesia, and of granules of phosphate of lime as well as of adhering mucus or pus cells.

The causes of inflammation of the mucous membrane of the urinary organs are innumerable. I should weary you by relating cases of acute or chronic inflammation of the bladder or kidneys from foreign bodies irritating the membranes, from injuries, whether cutting or crushing, from pressure caused by stricture or prostatic disease, from idiopathic or specific inflammation, as the extension of gonorrhœa; the action of strongly stimulating medicines; from the secondary effects of many other diseases, as scarlet fever, Bright's disease, malignant diseases, scrofulous diseases.

The ultimate results of alkalescence from volatile alkali are the formation of a fusible calculus and an irritable bladder.

Instances of the former result appear in very many of the calculi in the Museum. The white deposit, scarcely in a single instance is succeeded by any other deposit; that is, the inflammation of the bladder, when once it is set up, does not yield to treatment as long as the cause of the inflammation (the foreign body in the bladder) remains.

From whatever cause inflammation of the bladder arises it must be treated in the acute stage, as you would treat acute bronchitis, remembering that the urine is to the inflamed bladder what the air is to the inflamed bronchial tubes. The acidity of the urine must be lessened in order to lessen its irritating property. In doing this the opposite extreme must be carefully avoided, because the tendency is to alkalescence of the urine, and if this is produced a greater degree of irritation results.

Special remedies are generally to be used only when the inflammation becomes more chronic. Judging, however, from the treatment of acute gonorrhœa and acute conjunctivitis, it is possible that the early use of astringent remedies might be beneficial; but as yet I can give you no exact information on this treatment.

Some of the special remedies for chronic inflammation of the bladder are, buchu, pareira brava, turpentine, cubebs, copaiba. The properties of the three last-mentioned substances are so well known that I shall not dwell on them here. *But, regarding* the use of the two first named remedies, I think there is some

uncertainty. At least, I remember well the time when I was unable to determine the rules which might guide me in prescribing buchu, pareira, and uva ursi. The last medicine, you will remember, has been already mentioned in these lectures. It is an astringent. It acts like gallic and tannic acids, and therein is its use and distinction from the other two medicines. It has been said buchu does good when pus is present in the urine, and pareira brava is good when there is ropy mucus. From what I have said in this lecture, you will immediately see that this rule says, buchu is good when the urine is acid; pareira when it is alkaline. Now, there is nothing in the composition of the active ingredients of the two medicines which would make this a good reason for the rule. The buchu contains a peculiar extractive and a volatile aromatic oil; this last brings it into the class with camphor, turpentine, cubebs, &c.; while pareira brava contains starch, nitre, and a peculiar tonic extractive matter. Now, from this it would result, that it is more a demulcent than a stimulant; and the reason for the rule may be contained in this,—that, for the most part, when the pus is ropy from alkalescence, there is more irritability of the bladder than when the urine is acid and the pus globules separate. And, in accordance with this I find that pareira brava is of more service than buchu when there is much irritation. When there is a languid, sluggish state, without much irritation, the buchu is then the most useful remedy. Shortly, then, the rule which I propose to you is this:—When you want a stimulant give buchu; when you want a demulcent, give pareira brava; when you want an astringent, give uva ursi.

[It is scarcely necessary to add, that when the urine is foul from a retention of the residue in making water, the bladder should be emptied twice daily.]—*Med. Times and Gaz., April* 15, 1854, *p.* 368.

73.—ON PASSIVE HEMORRHAGE FROM THE KIDNEYS.

By Dr. E. G. Crooke, Chorley, Yorkshire.

[It is not always easy, when we are quite certain that the urine contains blood, to be able to state definitely from what part of the urinary apparatus it proceeds. Dr. Crooke is of opinion that it often precedes that condition in which albumen is present in the urine, viz: "*chronic albuminous nephritis*;" and that it often insidiously follows "*acute desquamative nephritis*," which is supposed to have yielded to treatment.]

Symptoms.—Passive renal hemorrhage offers to our notice two classes of symptoms—the general and the local. The general are those of anemia, the result of a continual draining away of that vital fluid, the blood; the local refer chiefly to the bladder. The general symptoms are, a pallid complexion, of a dirty-white or muddy colour; with dilated pupils; occasional headache and singing in the ears; the tongue is large, flabby, and furred, the edges thereof indented by the teeth; the bowels are open and loose; there is much flatulence and nausea, with irregular appetite; palpitation is frequent; the surface of the body is cool; the skin soft and relaxed, but dry; the pulse full, soft, and bounding, or small and soft, putting on the former condition upon change of posture; there is gradual but progressive emaciation, irritability, and gloominess of temper, with great disinclination to any exertion, bodily or mental. These symptoms vary in degree according to the longer or shorter duration of the disease.

2nd. The local symptoms are in some cases an aching pain in the loins, but this is perhaps, rather an exception than the rule. They, the loins, are rather the seat of an uneasiness and feeling of weakness, which is increased upon pressure; the calls to micturate are frequent and urgent, attended with pain, sometimes referrible to the penis, sometimes to the inside of the thighs and to the perineum; the urine is not much, if at all, increased in quantity when compared with the amount of fluids imbibed.

Pathological Indications of the Urine.—The usual quantity of fluids being taken into the stomach, the average daily amount of urine excreted may be stated at about fifty ounces. The specific gravity ranges from 1015 to 1035, the latter being the standard of the urina sanguinis. A gradual reduction in the weight of the urine has been observed in those cases which have been attended with frequent relapses. The colour is that of pale golden sherry; the odour is sweet; when recently passed, it has barely any action on litmus paper. A distinct alkaline reaction upon reddened

litmus has not, however, been observed. When poured into a test-tube, a very slight cloud may be seen floating near the bottom; if allowed to stand for an hour or so, a small opaline deposit, easily dispersible, will form. The recent urine is unaffected by heat, or NO_5 HO; but if allowed to stand after their action, a small flocculent precipitate sometimes forms; occasionally, however, no precipitate is visible to the naked eye. Of that portion which is allowed to stand, the supernatant liquid is unaffected by heat, and NO_5 HO: the deposit, however, is dissolved by the latter, indicating the presence of phosphates; and when heat is applied to the mixed fluid, as in the recent urine, a precipitate may or may not be the result. Upon submitting a drop of the recent urine to the field of the microscope, blood-discs, turgid or collapsed, single and not aggregated, together with epithelial cells and occasional casts of the uriniferous tubes, are seen; no pus-globules have been detected. Such are the usual characteristics of the urine; but the action of concurrent causes, as exposure to cold and the imbibition of diuretic fluids, renders the urine acid for a time, when crystals of uric acid and of the lithates, with blood-discs, are seen.

It will be observed that the symptoms, general and local, are those of that form of renal disease termed by Rayer "Chronic Nephritis," but that there is an important difference in the character of the urine. In treating of this "chronic nephritis," Dr. Christison states ('Lib. of Med.,' vol. iv. p. 270) "that the urine very seldom contains blood or albumen, unless other renal diseases concur." However, of that form of renal disease now under notice, blood-globules have been invariably contained in the urine, but could only be detected with certainty by the microscope. Liability to passive renal hemorrhage appears to be either constitutional or acquired. Persons constitutionally predisposed are those of lax fibre, fair complexion, with skin soft and supple, easily excited to action, but as readily depressed; persons of a tuberculous tendency, prone to affections of the mucous membranes, as catarrh, bronchitis, diarrhœa, &c., whose arterial system is in that state which may be termed irritable. Such a constitution appears, as it were, acquired by two other classes, who are specially prone to this hematuria—viz., those who are in the habit of consuming large quantities of diluent fluids, as haymakers, reapers, engineers, stokers, bleachers, tenters, dressers, and spinners in cotton mills—persons who, after exciting great cutaneous action by severe manual labour, or by working in a high artificial temperature, check the same by exposure to a much cooler atmosphere after the cessation of their daily employment. The habitual dram drinker is most prone to the acute form of Bright's disease, or to that stage which probably supervenes upon this—viz., that in which the urine is of low specific gravity, and contains free albumen. May not the frequent use of spirits, from their direct action upon the kidneys, by over-stimulating the organs, produce this hematuria, which may ultimately pass on to "chronic albuminous nephritis"? It may be observed, that of several cases of "passive renal hemorrhage" which have occurred in the practice of the writer, not one could, as far as the patient's recollection served, be traced to any dropsical affection, proximate or remote.

The average age of the persons affected was above thirty-five years; they were chiefly of the male sex, probably on account of the greater exposure of males to the predisposing and exciting causes, which latter appeared, as far as they were traceable, to be exposure to cold damp air when in a state of perspiration, frequent use of diuretic spirituous liquors—in fact, any circumstance which, depressing the heat of the body, produced congestion of the viscera.

Pathology of the Disease.—The presence of blood in the urine affords ample proof of the existence of hemorrhage from some part of the genito-urinary passages, the state in which the blood-discs are found, the inadequacy of chemical re-agents to detect them, the occasional casts of uriniferous tubes, and the natural colour of the urine, indicate that the hemorrhage is renal, yet not of an active kind. But the comparative paucity of the globules discharged would lead to the conclusion that the kidneys are not suffering from any organic lesions, but from an unbalanced state of their circulation. This state of venous engorgement may probably exist for some time without any structural change in the glands themselves, but unless relieved it is apparent that exudation will ultimately occur, and derange the whole action of these excernent organs. The actual progress of this hematuria into chronic albuminous nephritis has not been traced, the remedies used in the cases, of which this

paper is a general history, having had the effect of checking, if not of curing the hemorrhage.

Treatment.—The therapeutical indications are three in number. First, to check the hemorrhage by relieving the congestion; secondly, to restore the general health; thirdly, to guard against relapse, and this is an important point, as there is a great tendency thereto upon the application of any exciting cause. The first indication may be effected by rest, daily use of the warm bath, with friction to the bodily surface, local depletion, abstinence from diuretic drinks, bland farinaceous diet, and the use of astringent remedies. To relieve the gastro-hepatic derangement, a small quantity of blue-pill, with a sedative saline draught, will be found useful at intervals during the exhibition of astringent remedies, the best of which is gallic acid. It has been given in the following form;—Gallic acid, a drachm; dilute hydrochloric acid, two drachms; solution of hydrochlorate of morphia, (E. P.,) one drachm; distilled water, five ounces and a half, as a mixture; a tablespoonful to be taken every fourth hour. The the rapeutical effects of gallic acid are well described by Dr. Golding Bird:—"Gallic acid acts as a direct astringent, reaching the renal capillaries, and finding its way into the urine, which becomes strongly charged with it, &c." To relieve the irritability of the bladder, five grains of soap-and-opium pill should be used every night as a suppository. These medicines should be continued until the hemorrhage ceases, and the vesical irritability which remains for some time after the cessation of the hemorrhage, is relieved by tincture of cantharides, in doses of from ten to twenty drops, combined with an anodyne. When the urine is free from blood-discs, the general hygienic rules for restoring tone to the system should be enforced; animal diet with a few glasses of sherry daily, may be allowed, and quinine with iron prescribed. As preventive measures, the warm bath with friction should be daily persisted in; flannel should be worn next the skin, and all exposure to exciting causes studiously avoided.—*Lancet, Jan.* 14, 1854, *p.* 40.

74.—ON SO-CALLED CHYLOUS URINE.

By Dr. H. Bence Jones, F.R.S., &c.

[Dr. Bence Jones has previously illustrated the effect of some acute diseases upon the renal secretion, as being causes and consequences of congestion of the kidney. He says,]

In cholera, scarlet fever, delirium tremens, and injury of the spinal cord, the effect on the urine was produced by these diseases affecting in different ways the circulation of the blood in the kidney. To say that the congestion arises from an effort to throw out a poison by the kidneys, is not to me more satisfactory than it would be to assert that the inflamed eye or ear, after scarlet fever, is caused by scarlet fever poison passing off by these organs. I am more satisfied with the explanation, that a state of blood prone to congestion and inflammation (excess of fibrin and diminished blood-globules) exists, and that, whether the congestion begins here or there, is determined by the slightest causes; thus, even in the injury of the spinal cord, in which any poison is out of the question, the congestion may begin in the kidneys, the bladder, the bowels, the lungs, or the skin, and it may pass into violent inflammation of this or that organ; while, in few cases, no congestion of any organ may occur.

In chronic diseases, also, it appears to me certain that an altered condition of the capillaries of the kidney gives a better explanation of the phenomena observed in the urine than is obtained by the doctrine of the elimination of a hypothetical poison. The disease which gives rise to the phenomenon of so-called chylous urine, in its causes, effects, and treatment, is, perhaps, the best example of the results of chronic congestion that can be brought before you; and, though it is but rarely met with, yet it will form, with the diseases which I have already brought before you, the best introduction to the causes and symptoms of Bright's disease.

Here is a specimen of the so-called chylous urine, given to me by a patient yesterday, who for twenty-five years has passed this milky fluid, containing even more albumen than is ordinarily met with in Bright's disease, and yet she has long ceased from trying to obtain medical relief. The close examination of such cases clearly proves that, except in the presence of the minutely divided fatty matter, which ap-

pears only when the chyle passes into the blood, there is no connexion between this disease and chyle, but that it depends on congestion of the kidney, which causes albumen, fibrin, and blood-globules to pass out in the urine, and reduces considerably the specific gravity of the secretion, by preventing the elimination of other substances. Hitherto I have not been able to make any microscopic examination of the kidney in this disease, nor am I able to refer you to any published account of the exact state of the kidney; still the remarkable variations of the disease, the medicines which make it better, and the causes which make it worse, point to a slight but decided change in the capillaries of the kidney (perhaps in the capillaries of the mammary processes), whereby, as in a filter, when the weight of fluid is too great, some substances are allowed to pass through which would be retained if the filter were stronger.

[Dr. Jones has seen four cases of this disease. In one case, all the peculiarities of the urine, during three years, will be found detailed in the 'Philosophical Transactions' for 1850, and in the 'Medico-Chirurgical Transactions' for the same year. Dr. Jones proceeds:]

My object now is to show you, 1st, that *Congestion takes place and causes albumen to pass off in the urine before any food has been eaten;* 2ndly, that *The effect of this congestion is also to diminish the specific gravity of the urine;* and 3rdly, to dwell on *The remedies for the disease.*

If you look at the following Table, you will find that the urine first passed each day is always the clearest, least like the specimen on the table. Very frequently, before getting up, no trace of albumen could be found by any chemical test, nor by the most minute microscopical examination could the urine be distinguished from perfectly healthy secretion. By causing the patient to get up before he had taken anything to eat, the urine became highly albuminous, and sometimes fibrinous to such a degree that the liquid gelatinized on standing, while, by the microscope, blood globules could be detected in considerable quantity. At the same time, the specific gravity was reduced eight or even twelve degrees.

The amount of albumen was comparatively determined by precipitating the urine by alcohol. This does not give the albumen directly, because the sulphates are at the same time precipitated.

The following examples of the state of the urine before food will show the increase of the albumen and the decrease of the specific gravity:—

Urine passed at	Precipitate with Alcohol. Per 1000 grs. urine.	Specific Gravity.
7.15 a.m., on getting up, gave scarcely a trace of albumen	0·8 gr.	1027·
9.50 a.m., just before breakfast, opalescent; coagulated to solid	14·1 „	1015·6
11 a.m., after breakfast, perfectly milky	14·5 „	1013·4
Another day—		
6 a.m., on getting up, urine clear; no trace of albumen	1·6 „	1026·4
7.30 a.m., before breakfast, opalescent	11·9 „	1018·8
Another day—		
6.35 a.m., on getting up, yellow, milky	3·6 „	1026·6
8.10 a.m., before breakfast, more milky, with large pinkish coagula	16·58 „	1016·4

I frequently determined beforehand whether the urine before breakfast should be albuminous or free from albumen, by directing the patient to get up and move about early, or to keep very quiet in bed; and by keeping him in bed all the day, the urine throughout the whole day was very slightly albuminous.

The following *conclusions* are given in the 'Philosophical Transactions':—

1. That so-called chylous urine may contain fat, albumen, fibrin, and healthy blood globules.

2. That, although the fat passes off in the urine after food is taken, yet the albumen, fibrin, and blood globules are thrown out before any food has been taken. During perfect rest the albumen ceases to be excreted, and it does not appear in quantity in the urine even after food is taken, provided there is perfect rest. A short time after rising early, the urine may coagulate spontaneously, although no fat is present in perceptible quantity, and this may happen previous to any food.

3. Though the urine made just before and a short time after bleeding was as milky as usual in the afternoon, yet the serum of the blood was not milky. It did not contain a larger quantity of fat than healthy blood does.

In another case, in which I have a record of the appearance of the urine each time it has been passed from the 13th of May to April 26, the urine has been clear without exception in the morning of every day. It has become more or less frequently thick at noon, and very thick in the afternoon and at bed-time. No trace of albumen has been present in the morning; while much albumen, and even blood-globules, have been perceptible in the water passed at other periods of the day.

In neither of these cases have I detected any fibrinous casts of the tubes; and hence I have conjectured, that the congestion affects the mammary processes of the kidney, rather than the cortical structure.

Effect of remedies.—In the 'Medico-Chirurgical Transactions' the following table of the effect of remedies in the first case is given in 1000 observations:

	Chylous and Albuminous in different degrees.	Healthy.
1. On animal food	968 times.	32 times.
2. On vegetable food	910 „	90 „
3. Pressure by a loose belt	667 „	333 „
4. Pressure by tight belt	638 „	362 „
5. While taking matico	474 „	526 „
6. While taking gallic acid	17 „	983 „
7. After gallic acid	0 „	1000 „

The gallic acid was taken for twenty-four days in drachm doses, and decreased during the next twenty-nine days; it was diminished to fifteen grains, after which it was left off. The patient remained perfectly well for six months, with the exception of two days. The congestion then returned for a week, but again yielded to gallic acid; and for eight months the urine was perfectly healthy every time it was passed. A most intractable relapse then occurred, which lasted nearly five months. The gallic and tannic acids were taken; the first to the amount of twenty-five ounces in six months, the latter to the amount of two ounces. Two drachms of gallic acid in the day caused no unpleasant symptoms, while half a drachm of tannic acid caused nausea and headache. Ultimately, the albumen entirely disappeared. The urine remained healthy for six months, when the record ceased, in consequence of the patient's departure to the West Indies.

In the other case, which has for nearly a year been under my observation, a drachm of gallic acid was at first taken daily; this was soon increased to a drachm and a-half, and then two drachms daily, and after about two months three drachms of gallic acid were taken each day. The urine was occasionally for a day or two made healthy; no inconvenience was experienced from this dose; on changing it for a drachm of tannic acid daily, the patient was made "exceedingly uncomfortable," "painfully sick at the stomach," and he could not continue taking more than half a drachm in the course of the day. The tannic acid also occasionally made the urine healthy for a day, but after about three weeks the gallic acid was resumed in three drachm doses on account of the nausea produced by the tannin. It was continued for a fortnight without improvement, when tannate of alumina was given, about a scruple dissolved in very dilute sulphuric acid,—about three drops of acid in an ounce and a half of water. Here is this mixture, in which, as you see, the tannate of alumina is by no means perfectly dissolved. It had, however, a very decided effect on the urine on the fourth day. On the eighth it was perfectly clear. Afterwards, by dissolving a drachm of tannic acid and a drachm of alum, in three ounces of distilled water, a very much clearer and equally efficacious mixture was obtained; this was diluted with water, and taken daily in decreasing doses for three months, with scarcely a return to the disease. Since the 18th of February, the medicine has been stopped, and the unhealthy urine has not re-appeared. In less than five months more than thirty-three ounces of gallic acid were taken.

From these cases it is evident that *gallic acid may be given in very large doses, for a considerable time, without any ill effect.* The appearance of the acid in the urine may readily be detected; how rapidly I have not determined, but probably in the course of a few minutes, judging from the rate at which other soluble substances

can be found. Thus, in some late experiments, even one grain of iodide of potassium, dissolved in an ounce of water, taken on an empty stomach, I have found in twelve minutes, and very distinctly in fourteen minutes. When seven grains of the sulphate of protoxide of iron, in two ounces of water, were taken on an empty stomach, I found a portion in the urine in ten minutes, and very plainly in fifteen minutes.

Even in *hæmoptysis* you may give gallic acid in drachm doses with great benefit and without risk. I have never seen any bad symptoms from its use. Certainly the patient who passed the chylous urine now before you, said, that a single dose of ten grains of gallic acid caused giddiness of the head and uneasiness of the stomach, in consequence of which she would take no more; but I do not consider that this is to be weighed in opposition to the cases I have related.

I may remind you, that this medicine has been recommended in Bright's disease. In the hospital and in private I have tested it most carefully. I have never seen small doses stop the escape of the albumen into the urine, and in larger doses I have seen severe epilepsy follow its employment. Thus a painter, aged 39, had dropsy one month. The urine was highly albuminous; specific gravity 1013. As he did not improve by using vapour-baths and compound jalap-powder, gallic acid was given in ten-grain doses four times a day. The day but one following the quantity was increased to twenty grains thrice daily. He took only two doses, when he complained of severe pain in the head, and in half an hour he had a violent epileptic fit, which left him perfectly insensible. In twenty-four hours he had nine similar fits; for two days he was comatose. He remained in the house four months after this, during which time he had no more epilepsy.

The chemical relation of gallic acid to tannic acid is seen in the formulæ:—

$$\left.\begin{array}{l} \text{1 eq. tan. acid} = C_{18}\,H_8\,O_{12} \\ \text{8 eq. oxygen} = \quad O_8 \\ \hline C_{18}\,H_8\,O_{20} \end{array}\right\} = \left\{\begin{array}{l} C_{14}\,H_6\,O_{10} = \text{2 eq. gal. acid} \\ \quad H_2\,O_2 = \text{2 eq. water} \\ C_4 \quad O_8 = \text{4 eq. car. acid.} \\ \hline C_{18}\,H_8\,O_{20} \end{array}\right.$$

So that tannic acid, when oxidised, gives rise to gallic acid, carbonic acid, and water. This happens when tannic acid is taken as medicine, for then gallic may be found in the urine. The chemical composition does not at all account for the more astringent action of tannic acid on the stomach. Judging by the cases I have mentioned, I consider that tannic acid is at least three times as astringent as gallic acid; and, from the comparative solubilities of the substances, I think that generally, as well as locally, there is no superiority in gallic acid.

The combination of tannate of alumina, and the mixture of tannic acid and alum, used locally for *leucorrhœa*, I have found very efficacious; and the former substance, Mr. Morson tells me, is much used. From its insolubility in water, it is probably less active than the solution of tannic acid and alum.

Here is another astringent substance, for which I am indebted to Mr. Morson. These fine crystals are iron alum; that is, alum in which the potassa is replaced by oxide of iron. It is soluble in water, and, in doses of five to ten grains, highly tonic and astringent. In anemic patients with leucorrhœa, it is most useful.

I must conclude this lecture by a few remarks on two substances frequently used as astringents in urinary disorders,—uva ursi and matico.

The leaves of the uva ursi contain 36·4 per cent of tannic acid, also gallic acid, and a bitter extractive matter. The tannic acid is by far the most important agent which is present. It is this which makes the infusion of uva ursi incompatible with metals and cinchona bark. Forty-five minutes after the infusion has been taken, the tannic acid has been detected in the urine. In *menorrhagia*, *cystorrhœa*, *diabetes*, and in other fluxes, the infusion has been found useful. It has been recommended in consumption. The dose of the leaves powdered is from ten grains to forty grains, in which there are from 3·6 grains to 145 grains of tannic acid. The decoction is made by boiling an ounce of leaves in twenty ounces of water, or forty-eight grains of the leaves to two ounces of water; that quantity of liquid should, therefore, contain about seventeen grains of tannic acid. For clearness, then, the decoction of uva ursi may be considered as a solution of tannic acid, containing seventeen grains in two ounces of the liquid. Possibly the other constituents of the uva ursi

leaves have some medicinal virtue, but I have no certain knowledge to give you on this point.

The astringent properties of matico have also been highly spoken of. As a remedy in *hematuria* I have found it useful. The dose of the powder is from 10 to 30 grains. An infusion of the leaves, in the proportion of an ounce to a pint of water, may be used. The matico, in its composition and mode of action, has nothing in common with the remedies I have mentioned in this lecture. It contains no trace of tannic or gallic acid. It belongs to the family of Piperaceæ. It more closely resembles cubebs than any other substance. Its astringent properties are due to a volatile oil, and hence its action may be classed with that of oil of turpentine; whether it possesses more astringent virtue than this last-mentioned remedy I have not been able as yet to determine.

The nature, then, of so-called chylous urine is placed beyond all doubt. The action in this disease of gallic acid, tannic acid, tannate of alumina, and tannic acid with alum, conjoined with the remarkable fact, that the urine becomes albuminous after exertion, before any food whatever has been taken, shows that congestion of the kidney is the cause of the symptoms. We have seen to-day, that this congestion may last more or less constantly for a quarter of a century, and that the mere loss of albumen in the urine is not of such serious import as from Bright's disease you might be led to suppose. We have seen, that the congestion might be kept off by rest, or be much increased by exercise, and be even stopped by perseverance in the use of the most powerful astringents. Lastly, we have seen, that not only does albumen in the urine appear daily, but that the specific gravity of the urine may be reduced by the congestion far below the specific gravity where no congestion existed. It appears from this to be very probable that close examination may detect this disease more frequently than has hitherto been the case.—*Medical Times and Gazette, Nov.* 12, 1853, *p.* 493.

75.—CONTRIBUTIONS TO THE EXAMINATION OF THE URINE.

By Professor J. Vogel.

The author's observations bear upon the amount of secretion, the specific gravity, and the colour of the urine. He regards the urine, not as a sign of local disease, but in its signification upon the general change of material in the body.

The quantity of the urine cannot be determined by weighing, but by measurement in standing glass vessels, which are graduated in cubic-centimetres,—1000 cubic-centimetres, of specific gravity 1030, weigh 1030 grammes. Thus can be learned both the whole quantity excreted in the twenty-four hours and the difference of amount for shorter periods, governed by various influences.

Two sources of fallacy must be borne in mind. First, it is never quite clear at the commencement of the observation, whether or no the bladder be completely empty; and secondly, the loss of urine during the evacuation of the fæces can only be guessed. Considerable accuracy may, however, be obtained by a repetition of the experiments.

The quantity of urine voided by a healthy man in the twenty-four hours varies between 1000 and 3000 cubic centimetres; the hourly secretion is from 20 to 200 cubic-centimetres. The causes of these variations are partly internal, partly external; some transitory, others of longer duration; some simple, others complicated. The influence of drink is the most remarkable. It may increase the secretion, within four hours, to three or even ten times the normal quantity. The influence of different diuretic medicines requires further investigation; as also the effects of other watery secretion in diminishing the flow of urine; likewise the influence of atmospheric changes. The medium quantity of urine in relation to the weight and length of the body is of varying amount. The quantity poured forth in the night is generally the least; while in the morning it increases, and in the afternoon or evening attains its maximum. There are, however, no conclusive observations upon this point in the case of women, children, and old men. People who are accustomed to void daily large quantities of urine, bear indifferently both hunger and thirst. Diseases which disturb the urinary secretion, are more dangerous in them than in other persons in whom the excretion takes another channel. But when the dis-

ease is characterised by excess of urinary secretion, recovery takes place more rapidly than in other persons of different habit.

As regards the quantity of urine secreted in disease, the author found it normal in many chronic feverless complaints, more especially in women. It exceeded the normal quantity but rarely; as in diabetes mellitus and insipidus. The quantity was diminished in the greater number of affections; mostly in acute fevers, at the end of chronic diseases, or in dropsy.

The specific gravity is of use to reduce quantity to weight; but it gives an uncertain representation of the amount of solid parts to the watery. Trapp, who endeavoured to correct Becquerel's tables, gives, as an approximation, the simple rule to subtract 1000 from the found specific gravity, and to double the remainder; the product gives the weight of solid parts contained in 1000 parts of urine. The following conclusions are deduced from the relation of the quantity of the urine to its specific gravity. As a rule, specific gravity and quantity stand in opposition to one another. When urine whose quantity is far below the standard shows a high specific gravity, it indicates abstinence from drink, or excessive watery excretion in other channels. A great secretion of urine, with low specific gravity, proves great absorption of fluid. Low specific gravity, with diminished urinary secretion, points to disturbance in the secreting function, as in Bright's disease; an abundant secretion, with high specific gravity, leads to the supposition that sugar is excreted. The medium specific gravity of a healthy man is 1020; according to Becquerel, it is 1018·9. A man weighing 100 kilogrammes (200lb.) voids in the hour 103 grammes of urine; of which 4·1 grammes, or rather more than a drachm and a quarter, is the weight of solid parts. In most chronic diseases, the amount of solid parts is diminished; while in two classes the quantity of urine is excessively increased: in one, there is an addition to the number of solid constituents, namely, in diabetes mellitus and insipidus, attended with emaciation, &c.; in the other, namely, hydruria, there is diminution of the solid parts and loss of specific gravity. In the latter case, there is no emaciation, and the process favours the elimination of morbid products, as in many cases of dropsy. In acute fevers, the quantity of the urine is less, but the specific gravity increases in proportion as the amount diminishes. The urine, in such cases, contains, it is true, less solid matter than that from a perfectly healthy man, but not less than that voided by a person suffering from some chronic complaint. Such patients are in the position of one starving, the solid matter of the urine being obtained at the cost of the body. At the quick approach of death there has been noticed a continued increase of specific gravity with a continued decrease in the urinary secretion. When death ensues from injury to the medulla oblongata, the quantity of urine remains considerable to the last, but the specific gravity is small. A great amount of combinations of chlorine will be poured forth in the hydruria which removes hydræmia; and this agrees with the observation of Schmidt, that a deficiency of albumen in the blood may be supplied by the taking up of a certain quantity of chloride of sodium.

The author arranges the colour of the urine under three divisions, namely yellow, red, and brown; and he establishes the colour by comparing it with definite mixtures of gamboge; gamboge and carmine; gamboge, carmine, and Prussian blue. Each of these falls into three subdivisions, namely, pale yellow, bright yellow, yellow; reddish yellow, yellowish red, red; brownish red, reddish brown, brownish black. These hues can be accurately obtained by different dilutions of the above-mentioned colours. In health the colour of the urine varies mostly between reddish yellow and bright yellow; but every individual has some standard colour of his own. In diseases the colour varies greatly. Pale urine is voided in hysterical and nervous patients; in many cases of anemia; in convalescence. In all feverish attacks the urine is yellowish red or red, containing absolutely more colouring matter than in the normal state. In many cases of typhus, in Bright's disease, in scorbutic attacks, it becomes brown or brownish black, from admixture of blood discs. The author succeeded, by boiling, in separating a coagulum of hæmato globulin in these last cases, after which the urine was paler.—*Archiv. fur Wissenschaft. Heilk.* —*Medical Times and Gazette, Oct.* 15, 1853, *p.* 404.

SURGERY.

FRACTURES, AND DISEASES OF THE BONES AND JOINTS.

76.—ON UNUNITED FRACTURE OF THE FEMUR.

Under the care of E. STANLEY, Esq., F.R.S., at St. Bartholomew's Hospital.

[Several cases of ununited fracture, treated by Dieffenbach's Peg Operation, will be found in *Braithwaite's Retrospect*, Vol. xxvi. The following important case, in which Mr. Stanley lately had recourse again to the same operation, slightly modified, is thus recorded in the 'Lancet':]

Edward W., aged 27 years, was admitted into Darker ward on the 13th of August, 1853. The patient has been mostly employed in the country, is married and of very temperate habits; both his father and his mother are alive, no kind of taint seems to pervade the family, and the man himself looks healthy and robust.

He states that thirteen months before admission a tree which was being felled rolled over his thigh, and broke it towards the upper third. He was conveyed to his house, and the limb, after having been set, was put up by a surgeon. The fracture seems to have been simple, and the apparatus used for keeping the fragments in apposition was, according to the patient's account, one long splint placed under the thigh, and two short ones on either side. This was left on without being disturbed, for six or eight weeks; the splints were then taken off, and the man thinks that after a little handling of the leg he heard something snapping at the seat of the fracture. As it appears that no consolidation was found, the same splints were put on again; but some swelling now took place from the knee downwards. The application of a roller somewhat controlled the œdema, and the apparatus was now left on for twelve weeks more, the patient remaining all the while in good health. He maintains that no blame can be attached to himself as to the non-union of the fragments, as he lay very quiet for the whole of the period above mentioned. It became, however, evident that the ends of the fragments did not evince the slightest disposition to consolidation, and after various ways of obtaining it were tried, the patient applied at this hospital.

It was found, on examination, that the fracture was situated a few inches below the trochanter major, on the left side, and that the ends of the fragments were riding upon one another. Mr. Stanley ordered a gum-and-starch bandage to be carefully applied, hoping that the pressure of the apparatus would promote the throwing out of callus. This bandage was allowed to remain for several weeks, and on being taken off, it became evident that no union had occurred.

It was now thought that a system of direct pressure upon the spot where the ends of the fragments were in apposition might perhaps sufficiently excite the parts, and bring on inflammatory action, and a subsequent formation of callus. Mr. Stanley had, therefore, an apparatus constructed which allowed the patient to get up and walk about on crutches, while the fragments were kept in close apposition, and a certain amount of pressure exerted upon them. Small doses of mercury were given at that period, as this metal had, in several recorded instances, had the effect of promoting the secretion of callus.

This system was persevered in for a number of weeks, but it did not conduce to the desired effects; and Mr. Stanley now resolved to have recourse to Dieffenbach's plan, modified by the addition of a wire, intended to excite inflammation in the bone, besides securing the fragments in perfect apposition.

The operation took place on March 11th, 1854, whilst the patient was under the influence of chloroform. Mr. Stanley made a semi-lunar incision, about six inches in length, on the external part of the thigh, laying open the seat of the fracture. The ends of the fragments were easily brought into view, as the pressure which had been used in the attempts to obtain union had considerably thinned the soft parts over the ununited portions of bone. On examining the wound, a large piece of muscle was found lying between the ends of the fragments; this great obstacle to union having been removed, Mr. Stanley introduced pegs of ivory, about two inches long, into the extremities of the broken portions of bone, one peg in the

upper, and two in the lower fragment. A hole was now bored towards the end of the latter, and a double iron wire covered with silver was passed through the whole thickness of the bone. The wire was drawn through the shaft to a pretty great length, and the two extremities brought down and introduced into a perforation made through the end of the upper fragment. These extremities were carefully drawn through this second hole, and when they had been pulled out to some length, the ends were twisted, and connected with the loop hanging out of the original osseous perforation in the lower fragment. The flap was then brought down, and one suture applied.

Mr. Stanley had the limb placed in a suitable apparatus, and the patient has progressed pretty well since the operation. The two principal features that have marked the course of the case are a slight attack of erysipelas and sudden hemorrhage. But it may be hoped that these untoward events will not interfere with the success of the operation, and we hope soon to give an account of the successful issue of the case.—*Lancet, April* 1, 1854, *p.* 361.

77.—*Galvanism in Ununited Fracture.*—A case occurred some months ago, at the York County Hospital, in which, under the care of Mr. Holl, the house surgeon, galvanism was employed for the production of union in an ununited fracture. Mr. Holl introduced a needle from each side of the limb into the interspace between the bones, and then passed a continuous galvanic current through. The operation was repeated every day for about a fortnight, and a cure ultimately resulted. The fracture was of the leg, very moveable, and had existed more than a year.—*Medical Times and Gazette, Nov.* 12, 1853, *p.* 501.

78.—*On Extemporaneous Woven Wire Bandages, Splints, &c.*—[In a communication to the Medical Society of London, by James Startin, Esq., after speaking of the advantages which these apparatus afford, he says:] Each apparatus consists of woven and flattened copper, brass, or iron wire, of various thicknesses and strength, which may be plated with tin, or other metal, or lacquered. The cost of the woven and flattened wire is 8d. to 1s. 4d. the square foot, which, for splints or cages, can be cut with scissors into any desired form, and the edges covered with strips of thin lead, gutta percha, or sticking-plaster; or bindings of cotton, wash leather, &c, may be stitched on by needle and thread. The wire rollers require no binding, if in cutting them from the piece, care be taken to follow the wires of the woof closely with the scissors, so as to leave no projecting points. The flatting (i. e., passing the woven wire in the piece through the flatting mill-rollers) will prevent unravelling, both in the bandages and splints, whilst at the same time it gives the required uniformity of surface. The mode of applying either splints or cages is most facile. A piece of stout cartridge paper is to be employed to take the necessary pattern, which, being accomplished with as few cuttings as possible, is to be laid upon the piece of woven and flattened wire, and a counterpart cut from it, the edges of which are to be protected in any of the manners before indicated. When this is done, simple folds of lint or linen, wet in warm water, are to be applied smoothly to environ the limb or joint affected, when the wire splint, cage, or roller is to be adapted accurately to it, and fixed with tape or bandage. It will be obvious that the material forming these rollers or splints, whilst it ensures the necessary quietude to the injured part, will allow without difficulty or removal, the ready escape of discharges, and the use of wet applications; the splints and cages will also admit of openings (trap doors they may be called) being cut into them, through which the wounds, &c., can be dressed, without disturbing the support afforded by the splint. —*Lancet, Feb.* 4, 1854, *p.* 138.

79.—DESCRIPTION OF A NEW SPLINT.

Invented by Charles John Gibb, Esq., House-Surgeon to the Newcastle Infirmary, &c.

[*There* can be no question of the value of a splint, simple in principle, and *capable*

of adaptation to all fractures of the extremities and to any size of patient. Such a splint Mr. Gibb believes the one he has invented to be. He says]

I have invented a splint which, I believe, will be found, in general practice, capable of almost universal application in fractures of the limbs. The principle of the whole splint is that of the simple slide. Each part is made of pieces of sheet iron, which slide alongside of, or within each other, and can be fixed at any required length by a finger-screw. The various parts are designed in such a manner, as when fitted together in different ways, to form a splint of varying size, suitable to the limb of a child or a man, and in shape combine all the advantages of various sizes of the long straight, Liston's, McIntyre's, and Greenhow's double incline splints, for the lower extremity, or of small straight or angular splints, for the upper extremity.

The complete splint, pulled out to its largest size.

The splint consists, as will be seen, of a thigh-piece (1); lateral thigh and side-piece (2); two leg-pieces (3 3); a foot-piece (4); an additional side-piece (5); and a sling cradle. When required for use, the *thigh-piece* (1) can be shortened or lengthened to the size of the patient's limb, by relaxing the finger-screw seen at its under aspect, and pulling out or pushing in the one slide piece upon the other; and can be narrowed or made broader by shifting one or other of the holes seen in the lateral thigh and side-piece (2) on to the projecting male screws (*a a*) seen at the under surface of either side of the thigh-piece, and fixing it there by the corresponding female finger-screws. The *lateral thigh and side-piece* (2), as is evident, may be fixed on either side of the thigh-piece to suit a fracture of either limb; can be made of any required length, to extend to the short ribs of the patient, for the purposes of counter-extension having two slits above for the ends of the perineal band; and the one half may be placed at any angle with the other to suit the various bends of the body at the hip-joint, by alterations in the spring-catch, which locks the joint seen at its centre.

The required length for the leg can be secured by alterations effected in the position of the slides of the *leg-pieces* (3 3); by loosening the finger-screws near to the figures (3 3); and the breadth by similar alterations in the screws and slides at *b* and *c*. The joint (*d*), seen in the right-hand leg-piece of the knee, is to allow of the flexing and extending of the knee; and the spring-catch, seen a little below the letter (*d*), is used to fix the joint by placing the catch in the small hole in front of the letter (*d*), which there locks into corresponding holes in the other part of the leg-piece, entering into the composition of the joint.

The form and size of each piece of the splint have been most carefully determined by experimental observation, in order that the whole of the splint may be capable of being accurately adjusted, to suit the limbs of children or men, and the requirements of their varied fractures and dislocations.

As seen in the preceding woodcut, the splint resembles the fracture-bed of Mr. Greenhow, and is more especially adapted for the treatment of bad cases of compound or complicated fractures or dislocations of the leg, ankle, or thigh. Several of such cases have already been most successfully treated upon it.

The interval between the leg-pieces is filled up by strips of bandage or India-rubber sheeting, as seen in the cut; one or more can be removed to allow of the dressing of the wound of a compound fracture without disturbing the position of the limb in the slightest. This is found an immense advantage over the ordinary splints in the treatment of cases where the wound is large or extends round the limb; for by no other contrivance is it possible to cleanse or dress the wound, without consi-

derable disturbance of the bandages, splints, and even of the limb itself, with consequent rubbing together or displacement of the ends of the bones, and accompanying pain and ill-effects to the patient.

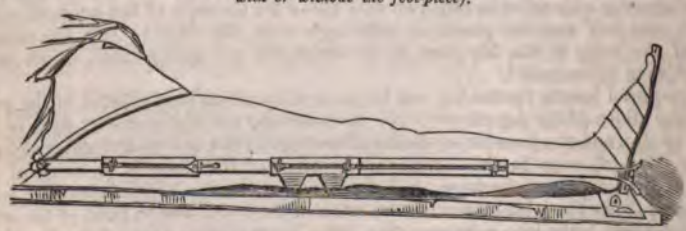
The limb lies most securely upon the splint, as upon all others, when the cushions or paddings are thin; and where there is a compound fracture of the leg, it is by far the best plan to support the wounded part of the limb simply on the strips of bandage, as the dressing can be effected daily, or oftener, if necessary, with the most perfect ease, by simply withdrawing the pieces of bandage, and thus exposing the whole circumference of the limb.

A scoop, placed under the splint at the injured part, will also receive the discharge escaping from beneath the dressings through the intervals between the strips of bandage, thus preserving the bed and clothes clean and wholesome, even in the worst case.

When the foot of the patient is securely fixed to the foot-piece any amount of extension can be made by loosening the finger-screws at (3 3), fixing the thigh-part of the splint to which the perineal band is affixed (for the purpose of counter-extension) and drawing out the slides of the leg-pieces by traction at the foot, and thus extending the leg. When the requisite extension is made, the whole can be securely fixed by again tightening the grasp of the screws. In my original splint the extension was effected by a suitable extensing-screw attached to the foot-piece; but I found in practice, that it complicated, added greatly to the expense, and offered no compensating advantages over that already described, so that I abandoned it, as well as some other screws which were fixed to the slides at *b* and *c*, for the purpose of expanding or contracting the breadth of the fracture-bed between the leg-pieces (3 3), and I now retain the simple slide motion at these parts.

The great but actually little understood advantages of the sling posture are secured by suspending the splint in the accompanying cradle. The form of the cradle portrayed in the cut is not quite that which I now use. It is capable of being taken to pieces, like the whole of the splint, by loosening the screws at *f f*, and removing the cross-bar, and as a joint exists at *e e*, the whole can be folded up into a convenient form; indeed, the whole splint and cradle can be wrapped up into a comparatively small parcel, portable on the front of the saddle, or under the arm, to any distance without inconvenience.

A long straight splint, formed by joining the lateral thigh and leg slides together (which can be used with or without the foot-piece).

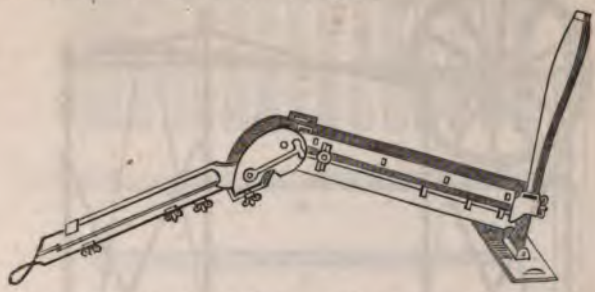


The additional slide-piece (5) (seen in the first cut) can be used alone, or united with the foot-piece (4), in fractures or dislocations about the leg. It can also be attached to the lateral thigh and side-piece (2), and thus forms a convenient long straight splint, applicable to fractures of the thigh, &c. The preceding woodcut illustrates the splint formed by the junction of the parts mentioned, and with regard to size will fit any limb, and may be used entire or in parts.

When the lateral thigh and side-piece is removed from the complete splint to form the long straight splint seen in the preceding cut, the resulting splint resembles in all respects the common Liston's or McIntyre's double-incline plane fracture-beds, and may be used for all the purposes for which these are suitable, having also the additional advantages of being capable of exact adjustment to the size of any limb, with moveable pieces of bandage at the back of the leg, to enable the surgeon to inspect and dress all parts of a limb with compound or other fractures, and the ability to hang it in a sling-cradle, if necessary.

The following cut shows this portion of the splint reduced to its smallest size,

and that when the complete splint is deprived of the lateral thigh-piece and cradle, a splint is formed similar to Liston's or McIntyre's.



The next cut exhibits the lateral thigh and side-piece applied to the arm, where it is applicable as a splint to any fracture of the humerus or elbow-joints. In practice it has been found useful in those fractures, and has the advantage of being capable of allowing extension to be made to the limb.

I may add that the expense of the whole splint with the cradle is scarcely greater than Liston's ordinary splint, and has been spoken of to me in the highest terms by several of my medical friends who have used it. They report that it fulfils all the ends for which it was invented; namely, simplicity of principle, and capability of adaptation to all fractures of the extremities, or to any size of patient.

At a future opportunity I will introduce it in connexion with several interesting cases, usually found most difficult to manage, and in which it has proved an efficient instrument of cure.—*Med. Times and Gazette, Dec.* 31, 1853, *p.* 676.

80.—LIFTING APPARATUS FOR BEDS—THE LAWSON BED AND TRANSFERRER.

[Mr. Fowler, house-surgeon to the United Hospital, Bath, brings forward an invention of Henry Lawson, Esq., of Bath, for the purpose of lifting patients in hospitals. The following woodcut will fully illustrate the description.]

A is a four-post bedstead, of any kind; in the Bath Hospital it is of iron, and with French castors, for the facility and ease of being moved.

B is a mattress of any kind; either of wool, or flock, or feathers.

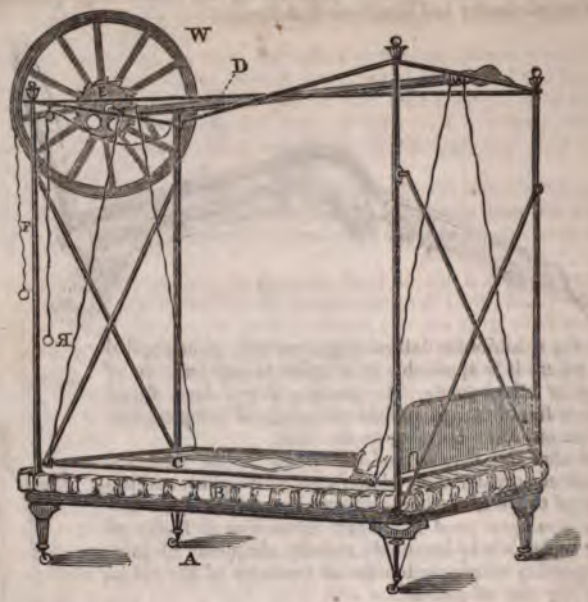
C is an oblong strong frame, on which is strained a strong cloth, well supported by interlaced webbing beneath, and having an aperture of requisite size in the middle.

D is an axis, with a grooved wheel fixed at one end, and resting on rollers placed close or near to the wheel, the other end of the axis resting upon the bar, as shown in the drawing. From this axis four cords descend, which are fastened by hooks to the four corners of the frame C.

E is a ratched or notched wheel, with the teeth peculiarly formed, so as to prevent accidents; and appertaining to which wheel is a ratchet or click, which communicates by a cord with the ring R.

F is a cord which goes twice round the wheel W, and hangs to the ring R, ready for use.

Fig. 1.



The purport of this arrangement is to enable an individual nurse to attend to the wants of a paralysed patient without loss of time or need of assistance. On the wants of a patient being made known, the nurse draws the cord F; and the lines or cords fixed to the corners of C, by winding round the axis D, raise the patient to the required height, and he is retained there by the click or ratchet near E. When it is required to replace the patient on the mattrass, the nurse pulls the cord F with one hand, and with the other pulls the ring R, which releases the click (in consequence of F being first pulled), and the patient can now (by the nurse permitting the cord F to slide slowly through her hand) be lowered with the necessary gentleness, and placed again on the mattress, without noise or derangement of his recumbent position.

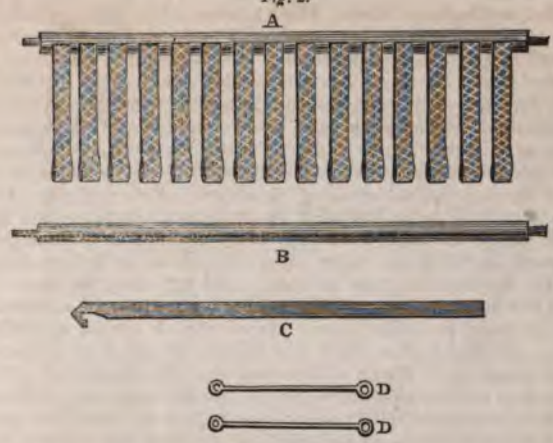
The bed at Bath is furnished with a duplicate of the frame C, which may easily be substituted for the one in use, when, for the purposes of cleanliness, such change is advisable.

The benefits that are sought to be attained by the above contrivance are, the great facility with which the heaviest and most helpless patient can be moved and adjusted for the operations of nature; that it can be manufactured by any good carpenter, having no noisy metallic wheel-work or winches, or complex machinery, in its construction; that it may be transferred, without fear of derangement, to any house where it may be required, and placed on any four-post bedstead that presents itself, with the greatest ease and facility.

Dimensions of Apparatus.—Diameter of wheel, three feet five inches; diameter of axis, two inches; length of axle six feet four inches; bedstead, six feet five inches by three feet three inches; height from floor to axis, seven feet; height from floor to upper surface of mattress, two feet.

Fig. 2 represents an instrument or machine whereby the most severely wounded person can be transferred from one bed to another, or one place to another, with the least risk of deranging dressings, or inflicting pain. A is a pole, about seven feet long, to which is affixed, at equal distances, and equal spaces between, a number of loops of webbing or girthing, about two feet six inches long, and two inches wide. B is the antagonist pole. C is the needle for drawing the loops. D D are iron stays, about two feet four inches long.

Fig. 2.



When the patient is to be removed or transferred, the pole A must be placed on the bed, alongside the patient, taking care to have all the loops on that side; then pass the needle C under the legs of the patient, either above or below the sheet on which he lies; and hooking it into the loop of the first web, draw it towards you. Do so in succession up to the head, and the patient will then be lying on the webbing. Now slip the pole B through the loops of the webbing, and place the iron rods E D on the ends of the poles, and the machine is ready for use. Two men—one at the head, and the other at the foot—can now raise and transfer the patient with ease and safety to whatever required.

The transferrer will, in many cases, by not using the iron rods, be found more safe and convenient than a chair for the removal of weakly and somnolent patients up and down stairs.

The Lawson bed and transferrer is made by Mr. Roper, carpenter and builder, Guinea-lane, Bath.—*Med. Times and Gazette, Dec.* 24, 1853, *p.* 651.

81.—ON THE PEDUNCULATED EXOSTOSIS OF THE LONG BONES.

By James Syme, Esq., Professor of Clinical Surgery in the University of Edinburgh.

As the expression exostosis literally implies merely an inordinate growth of bone, it has been employed to denote a great variety of morbid conditions in which this circumstance happens to exist. The "callus" that repairs a fracture—the new osseous shell which supplies the place of a dead shaft—the spina ventosa or expansion caused by the accumulation of pus or other fluid—the spicular or foliated excrescences that shoot into the substance of an osteo-sarcomatous tumour—and the bony prominences of morbid growth resembling the natural processes connected with the origin and insertion of muscles, have all been included within this comprehensive title. It is to a particular form in which the last mentioned of these productions appear, that I now wish to direct attention.

[Puberty is the period of life when these simple growths are chiefly developed. Indeed, in young and growing persons, the symmetry of the bone is often lost from the processes and articulating extremities growing more rapidly than the other parts, but as a rule we may always express an opinion, that in time the proper proportions will be restored.]

The constitution of these growths is quite similar to that of the spongy extremities of the long bones, being composed of a thin, osseous lamina externally, and a more or less compact, consolidated texture within it. While enlarging, they have an incrustation of cartilage, whence they have been called by Sir A. Cooper and others—in my opinion, very improperly—the cartilaginous exostosis, since any bone in the body might with equal propriety be designated cartilaginous: and as this

nomenclature is sure to occasion confusion between the truly osseous growths and those of a fibro cartilaginous nature, which anatomically, pathologically, and practically require to be carefully distinguished. Thus Sir A. Cooper describes under the same title, well marked cases of these two most dissimilar conditions, and in his lately published work, Mr. Paget has pursued this course with, if possible, still less regard to the diversity of the tumours thus associated together. Anatomically, they differ in constitution, which, in one case, is the simple bony texture encrusted externally, so long as it is growing, by a plate of cartilage; and, in the other, it is a fibro-cartilaginous growth enclosed within the expanded bone, or dispersed through the interstices of its honey-comb looking structure. Pathologically, they differ in the one sort of growth being limited in its tendency to increase, and producing no inconvenience except from the peculiarity of its position, as when seated under the nail of the great toe, while the other has no bounds to its enlargement, which depends upon the fibro-cartilaginous substance, and not upon the bone. Practically, they differ in this important respect, that while the one may be removed by division of its neck or base; the other cannot be extirpated except by taking away the whole bone, or dividing it at a sound part beyond the confines of the disease. It was from not attending to these distinctions that Mr. Liston, who first drew professional attention to the exostosis of the toe, insisted upon amputation as essential for the patient's permanent relief; while due regard to them led me to practise removal of the growth alone, as sufficient for attaining the object in view—a procedure which, though for a time reprobated by Mr. Liston and his followers, has long since become the established rule of practice. On the other hand, a knowledge of the depth to which the fibro-cartilaginous growth strikes its roots into the bone affected, has put an end to those painful scenes which surgeons of the present day witnessed in their youth, when attempts were made, of course in vain, to dig out such tumours from the upper and lower jaws. By disarticulation or division of the bone, where ascertained to be sound, the patient is now effectually relieved in a few minutes, instead of being subjected to the prolonged torture of hours, without the chance of benefit to his case, and with the greatest risk of its aggravation. Having happened to remove the first superior maxillary bone that was removed upon this principle in Great Britain, and having entered upon the records of surgery the first instance of this operation which they contain, I must here protest against the unjust appropriation of any credit that may be due on this account, which has been copied from each other by the writers of students' books, of whom I may mention Mr. Erichsen as the most recent. My operation was performed in the Edinburgh Surgical Hospital on the 13th of May, 1829, and the case was published in the 'Edinburgh Medical and Surgical Journal' for July of the same year, so that the question of priority admits of no dispute.

Under the title of cartilaginous tumour, have been comprehended two morbid conditions of the osseous system, of the most different natures, which require to be distinguished for the establishment of their proper treatment. In regard to the osseous growths, associated with malignant tumours, serous cysts, and abscesses—as the new-formed bone is always perfectly sound in its textures, and owes its production to the influence of another morbid condition,—I think the disease in such cases should be named, not from the exostosis, but from the cause which has occasioned it, whether this may be a growth, a cyst, or an abscess. The expression exostosis would thus be restricted to its proper sense of denoting the change effected in the bone itself, and would only require to be farther divided into the solid, hollow, and spicular forms. Attention would thus be directed to the disease essentially requiring remedy, and not to an accidental concomitant.

I may now proceed to the special object of this communication, which is to explain a circumstance in the constitution of the simple exostosis when it proceeds from the long bones of the extremities, which may be of considerable consequence in regard to both its diagnosis and treatment. The most frequent situations of this growth are the inner side of the thigh bone a little above the condyle, and the neck of the humerus, just below the tuberosities into which the scapular muscles are inserted. It has a neck from half an inch to an inch in length, which is usually placed obliquely in relation to the shaft, and beyond this expands into an irregularly rounded form, nodulated on the surface, which is covered by a thin incrustation of cartilage, that presents a shining, pearly lustre, and has no communication with the

surrounding parts. In the case of a young man who came from Rothesay to the hospital for the removal of an exostosis on the *outer* side of the thigh bone, I find the same characters. The tumour consists of perfectly sound osseous substances, more or less tensely cancellated.

About five-and-twenty years ago I was consulted by a gentleman residing in this city, on account of a very large exostosis, in the usual situation, on the inner side of the thigh. He was a tall, strong, active man, and, in consequence of over-exertion, was suffering from swelling, redness, and pain of the limb at the seat of enlargement. I advised soothing measures, and expressed the opinion that an operation would not be requisite if he abstained from undue exertion in future. I frequently afterwards saw this gentlemen, apparently in the enjoyment of perfect health, and had no reason to entertain any doubt as to his being so for more than twenty years, when, in the month of February, 1851, Dr. Handyside asked me to see him, on account of an alarming change that had taken place in the condition of the tumour. The thigh was considerably swelled and painful, especially when pressure was applied on the seat of the exostosis, which could not be felt distinctly in consequence of the thickening around it that had taken place, together with the effusion of some fluid that was detected by a deep fluctuation. In explanation of this circumstance, it was stated that the patient had lately been leading a life of much greater exertion, particularly in walking, than he was previously wont to do, and Dr. Handyside enjoined rest, and, after a time applied a blister. We thought that there was something seriously wrong, and were not free from the apprehension of cerebriform degeneration, but resolved to try the farther effect of rest, with gentle pressure. In the course of a few weeks the swelling and tenderness disappeared, the fluctuation could no longer be perceived, and the exostosis was felt no less distinctly defined than in former times.

I felt quite at a loss to account for this case, until the following one completely explained it. In November of last year Dr. Duncan asked me to take under my charge, in the hospital, a female servant who, in crossing the ferry from Fife, had received a blow, which was supposed to have detached an exostosis from its usual seat of attachment, above the knee, on the inner side of the thigh bone. As the limb was very much swelled, and extremely painful, I feared that delay might lead to suppuration, and therefore cut freely down to the exostosis; but in doing so was surprised to find a quantity of serous fluid, tinged with blood, lying between it and the surface immediately surrounding it. The whole truth at once appeared, and I no longer felt any difficulty in accounting for the smooth shining surface presented by growths of the kind in question, or for the fluctuation which, in the former case, had so much perplexed Dr. Handyside and myself. It was plain that a synovial membrane surrounded the exostosis, and was reflected from its neck, so as to afford a double covering, just as on the joints—the half of one being thus represented by the osseous growth, its crust of cartilage, and investing membrane.

I hope that the condition of what may be called the pedunculated exostosis, thus fully ascertained, may be of service, not only in its diagnosis, but also with reference to the means of remedy, since the complete insulation from surrounding textures, except at the comparatively small point of its attachment to the bone affords great encouragement to attempt removal, even under circumstances apparently much opposed to success. Thus, in the case of a young lady from Lancashire I saw lately with Dr. Simpson, there was an exostosis at the neck of the humerus, which pressed upon the axillary nerves, so as to occasion great and increasing distress; and, from this position, had been deemed beyond the reach of removal. But, having ascertained that the point of attachment was at the posterior surface of the bone, I made an incision between the deltoid and triceps, exposed the neck, detached it by cutting pliers, and extracted the exostosis, with hardly any bleeding, and no injury to the neighbouring parts.—*Monthly Journal of Medical Science, January*, 1854, *p.* 1.

82.—*On the Treatment of Fractures of the Base of the Cranium.*—By John Hilton, Esq., F.R.S., Surgeon to Guy's Hospital. If the patient be collapsed from the immediate effects of the accident, cover him up with blankets next his skin, add artificial heat by placing bottles of hot water in his bed, but not in contact with the

skin; give brandy or ammonia to aid reaction, and as soon as vascular and nervous reaction are sufficiently re-established after the accident, as evidenced by the gradual recovery of the natural temperature of the body, and by the improved state of the pulse, purgatives should be employed to clear the bowels efficiently. If the patient has been accustomed to take large quantities of stimulants, the same kind of drinks must be had recourse to, especially if the pulse flag, or the temperature of the surface be disposed to decline. After the purge has acted satisfactorily, give the patient mercury and chalk and Dover's powder: if an adult, five grains of each twice or three times daily during a few days, or until he become slightly mercurialized. The patient to be kept as quiet as possible reclining in bed, and not allowed to sit up or attempt to walk. If the pulse become hard, full, and incompressible, cup the back of the neck or apply leeches to the head, or bleed from the arm, but do it with care and discretion. Should the patient be very irritable, the head a little hot, the pulse a little accelerated, thirst slightly increased, the skin hotter than natural and dry, and the tongue furred and white, apply a blister to the nape of the neck, and give diaphoretics in the form of the solution of acetate of ammonia. Farinaceous food and iced water to be the first diet; if no fever or untoward symptoms arise within three days, then beef-tea and milk may be taken, and subsequently solid animal food.

Of course the directions for diet or medicinal treatment must be modified in relation to age, constitution, actual condition, and previous habits of the patient; here you must fall back upon the general principles of practice.—*Lancet*, *Dec.* 31, 1853, *p.* 619.

83.—ON DISEASES OF THE JOINTS.

By William Coulson, Esq., Surgeon to St. Mary's Hospital.

[In the present article Mr. Coulson traces the *general characters of articular disease in three different structures*, viz., the *soft parts*, the *cartilages*, and the *bones*.

Many writers on diseases of the joints deny that the capsular and ligamentous tissues can be the seat of any elementary change, because they are not endowed with blood-vessels. It is unnecessary to examine whether this opinion be correct or not, since a certain quantity of cellular substance is always mixed with the fibres of ligamentous tissue; and hence the ordinary phenomena of inflammation may be observed in the capsules or ligaments of joints, although the true fibrous tissue may not be vascular. Inflammation, with its well-known phenomena and effects, plays the chief part in the production of the morbid changes observed in the joints, as in nearly every other region of the body. All the superficial joints are more or less subject to inflammation, which may commence in the soft parts, in the cartilages, or in the bones.

Let us follow it through each of these divisions. When soft parts are inflamed they always present a more or less vascular and injected appearance, from accumulation of arterial blood in the vessels of the tissue. This increased vascularity is the most frequent and general lesion observed in the soft parts during articular disease. It is often seated in the synovial membrane, but still more frequently, I believe, in the cellular substance which unites the external surface of that membrane to the surrounding parts. One of the earliest effects of the inflammatory condition just alluded to is an increased secretion of synovia into the cavity of the joint, or of a fluid analogous to that poured out by inflamed serous membranes. In most cases the fluid contained in the joint is a mixture of synovia and turbid serum, but, as we shall presently see, the tendency to effusion varies much in different joints. Any severe degree of inflammation of soft parts is usually attended by effusion of coagulable lymph, and this substance is probably the chief agent through which are effected the numerous and apparently independent lesions that we find in cases of long-standing articular disease. I cannot now enter into the interesting history of coagulable, or as it might more properly be termed, organizable, lymph. My limits will only permit me to notice a few points in connexion with our present subject. The lymph effused from the vessels of an inflamed part is chiefly composed of serum and fibrin, and is distinguished from other secretions by the property it possesses of becoming organized into a vital tissue, and of subsequently passing

through a series of transformations connected with the repair of injury in different structures.

This is an important point to bear in mind, for it affords us an explanation of the diversity of morbid changes often found in the same joint. The earliest transformation which effused lymph undergoes is coagulation, whence arise those whitish false membranes you have all seen in cases of inflammation of serous cavities. These false membranes are often found in connexion with inflammation of the synovial membranes of joints. The next stage of transformation of plastic lymph consists in its being penetrated by vessels carrying red blood. The false membrane is now being organised for repair; it becomes more or less vascular, and is endowed with two of the main properties of living tissue,—viz., absorption and secretion. In this stage the plastic lymph often assumes the appearance of granulations. In the joints it may undergo still further transformations, and pass successively into the fibrous, lardaceous, cartilaginous, or osseous tissues. The lymph, in a word, has a tendency to assume the nature of the tissue it is intended to repair, or in which it has been deposited. These various changes may be traced satisfactorily in many cases of long-standing articular disease. The vascular transformation gives rise to the papillary or granular eminences which often cover diseased synovial membranes. In a more advanced stage the fibrinous element of the false membrane disappears, and is gradually replaced by gelatine; the tissue assumes more and more of the fibrous appearance; it is found on the articular surfaces of the bones when denuded of their cartilages; but more frequently it is connected with the periosteum and ligamentous structures, and it is the common cause of that mode of reparation known under the name of false anchylosis. But the fibrous transformation now spoken of is often, in the great joints at least, preceded by another change, to which the name of lardaceous has been given. This tissue frequently exists in joints said to be affected with white swelling; it is a species of cellular web, the meshes of which are filled with serum and fibrin; it is of a whitish colour, flexible, and of some consistence, and is most often found in the ligamentous tissues, or in the cellular substance external to the synovial membrane. Finally, in the most advanced stages of articular disease the effused lymph may be found converted into cartilaginous or even osseous tissue, but these transformations are very rare.

The secretion of pus is a common termination of severe inflammation. It may be derived from the inflamed vessels, though many surgical pathologists insist that pus cannot be secreted by a serous membrane without the previous formation of an organized false membrane. The purulent matter contained in diseased joints does not present any peculiarities worthy of notice; it is generally found in the cavity of the articulation, but may be infiltrated into any of the soft parts, or into the adventitious tissues of which I have just spoken.

Tubercular matter is also occasionally found infiltrated into the same tissues. Tubercular disease of the joints is, however, more intimately connected with the bones than with the soft parts, and I shall therefore postpone any notice of it for the present.

Ulceration of the soft parts generally occurs at an advanced period of articular disease, and is always, I believe, an effect of some other pre-existing lesion. The cartilaginous surfaces of the bones entering into the composition of a joint are, as might naturally be expected, often found more or less altered during the course of articular disease; but surgeons are by no means agreed whether such alterations are to be regarded as primary changes or secondary effects. In fact, it is still a disputed point whether the articular cartilages are endowed with vitality, or whether the synovial membrane extends over the whole of the surface of the cartilage comprised within the cavity of the joint.

Many of the continental anatomists maintain that the synovial membrane does not cover more than a few lines of the free surface of the cartilages, which merely fulfil the office of protecting the bone, and are not endowed with life, but are analogous to the nails, enamel of the teeth, &c.

On the other hand, Sir B. Brodie, Mr. Mayo, Mr. Liston, and most English surgeons, attribute independent vitality to the cartilages, have traced vessels into them when diseased, and believe "that they grow and may be destroyed nearly in the same way as other parts of the body." I am inclined to adopt the same opinion, as being more conformable to the results of pathological observation, and I also be-

lieve that the synovial membrane is continued over the free surfaces of the cartilaginous ends of bones. However this may be, it is certain that the articular cartilages are frequently the seat of morbid change, although pathologists, who deny their vitality, will of course regard such changes as secondary. The most frequent morbid appearance by far is ulceration, yet the manner in which a portion of diseased cartilage is removed has not been clearly made out; for in many cases the loss of substance bears little or no resemblance to that effected by the ulcerative destruction of soft tissues in other parts of the body. The question of ulceration of cartilage is, however, such an important one, that I shall reserve its pathology for future consideration.

Besides ulceration, many other morbid changes may be observed in the cartilages of diseased joints. In some cases the cartilaginous tissue appears to have undergone a process of hypertrophy, being increased in mass without any appearance of disease having existed in it. This change must be regarded as an effect of altered nutrition, just as one species of ulceration is, the nutrition being augmented in the former and diminished in the latter case. The degeneration of cartilage into the fibrous tissue already mentioned is another morbid change often observed in articular disease, particularly in aged persons. The cartilage looks as if it were being disintegrated or resolved into its original elements. The fibrous bands become very distinct, and can be traced from the articular end of the bone through the cartilage beyond which they slightly project into the cavity of the joint. A certain degree of tumefaction, with or without softening of the cartilage, sometimes accompanies the state of fibrous degeneration. The tumefaction of the cartilaginous ends is usually partial, the cartilage itself being of a yellowish colour and soft. It is never a primary lesion, and is only met with in cases of long-standing disease, when the joint has been kept for a considerable time in a state of perfect rest. Lastly, the cartilages may be more or less completely separated from the ends of the bones, and found loose within the cavity of the joint. This lesion can only arise after the destruction of the peculiar tissue which unites cartilage to bone, and such destruction can evidently be traced either to absorption through granulations developed between the cartilage and bone, or the effusion of pus into the same tissue.

The lesions of the articulating ends of bones have next to be considered in a general manner; many of them are the same as those already described as affecting the soft parts; for in both, inflammation may be followed by vascular injection, effusion of coagulable lymph, secretion of pus, and ulceration.

The lesions peculiar to bone are, deposit of tubercular matter, necrosis, and that particular change consisting in red softening, which for want of a better name I may denominate splenization. The various effects produced by the organization of lymph effused into the cancellated tissue form the majority of lesions observed in chronic disease of the bones. The lymph may pass through the same transformations and produce nearly the same secondary lesions as in the soft parts. The articular ends of bones may be the seat of tubercular deposit, presenting itself under the form of infiltration or collected into masses. In the former case we find a quantity of whitish cheesy matter in the cells of the bone; in the latter case a tuberculous matter, which presents no difference worthy of notice from tubercle in the lungs or other parts of the body. The tubercle is contained in a smooth cyst, the walls of which are often infiltrated with tubercular matter. The osseous tissue which immediately surrounds the tubercular mass is generally more or less indurated, but in a few cases it has been found softened, probably because the tubercle has not excited a sufficient degree of inflammation in the neighbouring osseous tissue to produce secretion of osseous matter. Tubercular deposit seldom exists in bones for any length of time without producing a variety of secondary lesions. One of its first effects is to excite ulcerative inflammation, accompanied by abscesses, and extending towards the periosteum or articular cavity. The joint soon becomes involved, and as the disease advances its constituent parts are gradually destroyed, the effused lymph within it, or the synovial membrane being often infiltrated with tubercular deposit. The description which I have just given applies to tubercular disease when confined to the bones. This, however, is rare. In the great majority of cases the tubercular affection extends to the various elementary tissues of the joint, involving hard and soft parts, the ligaments, bones, membranes, &c. Caries and necrosis are two lesions which affect bone, the one being somewhat analogous

to ulceration, and the other to mortification. Both lesions are often found in joints which have been the seat of disease for any length of time. When any portion of a bone, from injury, impeded nutrition, &c., loses its vitality, it dies like other parts of the body, and Nature sets about a process for its removal in the best way she can. Absorption of the surrounding tissues is the method which she generally adopts. Sometimes this takes place without any trace of inflammation, but, generally speaking, the removal is effected by an ulcerated inflammation similar to caries. The latter, in its true signification, is confined to the cellular or spongy tissues of bone, and it sets in after the deposit of pus or tubercular matter in these tissues, or when the organized lymph, of which I have spoken, has been converted into a granulating substance capable of effecting absorption. The frequent occurrence of this granular substance with caries would lead to the theory that caries is probably, in all cases, preceded by more or less inflammation of the spongy tissue of the bone; but the reverse of this is not true, for inflammation of bone is not always followed by caries.—*Lancet, Feb.* 18, 1854, *p.* 177.

84.—MODE OF EXAMINING THE HIP-JOINT IN DISEASE.

By Wm. Coulson, Esq., Surgeon to St. Mary's Hospital.

[Cases of this disease occur in which the deviation from the healthy form may be either very great or only slight. The patient must be uncovered and examined both in the erect and recumbent positions.]

On examining the limb, you will observe how the patient, if erect, avoids to the utmost of his power every movement of flexion or extension, keeping the pelvis slightly bent forwards, the leg flexed on the thigh, so that the heel does not touch the ground, and the whole limb slightly rotated outwards. This is the natural position, and any deviation from it will cause more or less pain. Hence you must ascertain the effects produced by different degrees of rotation, eversion, &c. At a very early period, probably from the round ligament being involved, eversion and abduction of the limb produce the greatest degree of suffering, which is also excited if you press the head of the bone against the cavity of the acetabulum. Pain is likewise excited by forcible flexion of the thigh, and at a later stage by rotating the limb inwards. In fact, nearly all the motions of the joint will be found limited to a certain degree, not so much from any structural change, as from the severe pain excited by accidental pressure on the tissues primarily affected.

The hip-joint is enveloped by a thick layer of muscles, which prevents any external appearance of swelling at an early stage; but if you examine the buttocks, you will find a slight diminution of bulk on the side corresponding to the affected hip, and this wasting increases with the progress of the disease, until it becomes a striking symptom. You will also take care to observe whether the lower edges of the nates are on the same level or not.

But the principal point we have to determine is that relative to elongation of the limb. I have already explained under what circumstances this apparent lengthening takes place, and it now only remains to teach you the best mode of effecting the different measurements of the limb, with the view of ascertaining how far the difference in length of the lower extremities may be real or apparent. Sir B. Brodie advises us to measure the distances from the anterior-superior spinous process of the ilium to the patella or ankle on both sides, when we shall find that these distances are equal; but many circumstances may cause a difference of distance between these two points, although the limb preserves its natural length. The ordinary method of proceeding is to place the patient on his back, with the legs slightly bent at the same angle, and parallel to each other. The fingers are next placed on the spinous processes of the ilium, and a median line is drawn down between the legs, from the centre of the distance between the processes. This done, it is easy to see whether the knees, ankles, and heels are on the same level. To determine whether or no one hip is more elevated than another, a line may be drawn along the middle line of the body, and then another line crossing it from one spinous process to the other. If the crista ilii be on the same level, these two lines will cut each other at right angles; if not, the transverse line will form an acute angle at the side next the depressed ilium. Dzondi and some other surgeons

recommend us to examine the patient seated in a chair. The lower extremities are placed parallel to each other, and care is taken that the transverse axis of the pelvis forms a right angle with the axes of the thighs. The two knees are now compared, and the prominence of either will be readily detected. The feet are next elevated, flexed on the thighs, and both limbs extended as completely as possible in a straight direction; after which, the positions of the heels are to be compared together. Having examined the patient in the sitting or recumbent postures, we must finally examine him while standing. In this position, the surgeon will direct his attention to the state of the nates and spinal column, the former being wasted, the latter generally presenting a curvature to one side; he will also have a better opportunity, in this position, of ascertaining how far one trochanter may be more prominent than another, what degree of weight is voluntarily thrown on the affected limb, and many points which might have otherwise escaped notice.

The various methods of determining the length of the limb, which I have just noticed, should not be neglected; but M. Bonnet has clearly shown that they only enable us to ascertain one out of the many conditions which exist together, and in their sum total constitute the change in the limb observed during the early stage of articular disease. They do not enable us to take into account the degrees of adduction, abduction, or rotation of the femur, or to distinguish functional from organic elongation of the limb.

The state of the groin must also be attended to; for some enlarged glands will often be found here at an early stage, or some slight tumefaction; and a good place to exercise pressure on the joint is a little below the groin, on the outside of the femoral artery, after it has descended below the os pubis, for here the articulation is least covered by soft parts.

The history of the case and the general symptoms may lead us to suspect the development of other and more important changes, the principal of which is abscess, with its characteristic physical sign, fluctuation. I have already spoken on this point, and shall now only add, that abscess of the hip-joint may sometimes be detected at a very early period of its formation, by placing one hand over the iliac fossa, and the other over the upper and inner part of the thigh. On alternate pressure between these two points, a sense of fluctuation will sometimes be felt here, though not distinguishable at any other part of the articulation; and I have already explained the reason, showing how perforation of the capsule at its inner and anterior portions, gives rise to an effusion of pus into the sheath of the psoas and iliacus muscles.

The changes in the limb hitherto observed, are for the most part functional; but as the disease advances, the bones, cartilages, and ligaments of the joint are gradually destroyed, and other changes, corresponding to the extent of mischief, are to be sought for. The principal are, shortening of the limb, or displacement of its articular extremity. To distinguish these states, and form some notion of the amount of destruction by which they are accompanied, a most careful examination must be made of the limb, and particularly of the relations which the osseous eminences bear to each other. The position of the patient will also be noticed, for it is characteristic. He generally twists himself into an awkward posture, making the affected hip bulge out, and throwing the knee of that side over the other, so as to relieve the head of the femur from pressure. When actual dislocation, however, has taken place, and the head of the bone becomes fixed in its abnormal situation, the positions of the patient and of the limb will be influenced by the particular form of displacement.—*Lancet, April* 15, 1854, *p.* 414.

85.—*Treatment of Hip-joint Disease*—The mode of treatment pursued by Professor Carnochan in morbus coxarius has been very successful. He relies principally on constitutional treatment, abandons the use and motion of the affected side, and allows the abscess to open spontaneously. The number of cases now in progress of convalescence, the general improvement in the physical appearance of the patients, and the absence of the distressing hectic, indicate the soundness of the principle upon which he proceeds.....The number of victims of Pott's disease of all ages is by no means the least interesting feature of practice to be seen here. With these also the principal attention is given to constitutional treatment, rest and coun-

ter-irritation of a mild character being the adjuvant means employed.—*American Hospital Records.—Lancet, April* 15, 1854, *p.* 423.

86.—CONSERVATIVE SURGERY, AS APPLIED TO THE TREATMENT OF DISEASES AND INJURIES OF JOINTS.

By Henry Smith, Esq.

The author commenced the paper by dwelling upon the importance of conservative surgery in general. During the last few years it had made rapid progress, and surgeons are now employing its resources in instances where, but a few years ago, they were little thought of. But, in diseases of the joints more especially, its greatest triumphs are seen; and not only with reference to operations performed upon these parts, but where attempts are made to arrest destructive disease and prevent operations. The symptoms, pathology, and progress of diseases of the joints, were gone into by the author, who stated that when called in to treat a serious case of affection of any joint, the surgeon should at once endeavour to dismiss from his mind the idea that an operation will be necessary, and thus he will be the more induced to put in force those resources which constitute the elements of conservative surgery. These are, a skilful application of local and general remedies, perfect rest of the part affected, and a patient reliance upon the efforts of nature. It was extraordinary what a vast amount of benefit might be effected by patiently employing these means in instances where apparently destructive disease of the joint was imminent The great importance of rest was more fully dwelt upon, and some instances were mentioned which in its employment had been attended with excellent results. One instance was, where a middle-aged man had received a severe blow on the shoulder, and had rapidly got destructive inflammation of the joint; ulceration of the cartilages took place, and the general system was so much disturbed, that death appeared to be imminent. The patient was sent to bed, the joint was kept perfectly quiet, remedies were given which removed constitutional irritation, and, by these means, the symptoms of the disease became subdued, and in a few weeks the patient had a partially stiff joint. In another case, where the author was called, a fine man had received a very serious injury to the knee and thigh, and amputation was proposed, and the instruments were actually taken to the house; but on careful examination, a large quantity of matter was discovered, situated very deeply; free incisions were made, and the patient rallied. Three weeks after this, Mr. Smith saw him again; destructive inflammation had been going on in the knee-joint, and it was now considered proper to amputate the thigh, but the patient strenuously opposed it, and, therefore, the resources of conservative surgery were patiently employed, and with the greatest ultimate success, for, some months afterwards, the man walked some miles to see him, his health being quite restored, his knee being stiff, and the whole limb little shorter than its fellow. In the treatment of diseases of the wrist-joint, more especially, were the advantages of rest observed. Some cases were narrated where the advantages of placing the forearm and hand on a splint, in apparently incurable disease in this joint, were most conspicuous. These recoveries were seen, and always more frequently to be expected, when the articular inflammation, and subsequent morbid changes, had been the result of injury rather than of constitutional disease. In these instances more time should be allowed for the beneficial operation of the resources of conservative surgery. The author next referred at length to the application of this species of surgery in operations upon the various joints of the body when diseased. Most well-informed surgeons were, now-a-days, more disposed than even a few years ago, to perform limited operations rather than submit the patients to the loss of an entire limb. When the joint alone was diseased—thanks to the example of Park, Moreau, Crampton, Liston, Syme, and Fergusson—great triumph had been achieved in this department of scientific surgery. The success following resection of the elbow-joint was quite remarkable, and indeed the operation had almost been confined to that and the shoulder-joint, until lately, when inquiry had been made as to what would be the result of its application to the hip. Much opposition was excited against this inquiry being practically carried out; but the operation has been attended with such success that it is now an established one in surgery. Then came the knee, and this question has, and is now, exciting great

attention, and some senseless and angry discussion, but that he was happy to tell this meeting that some very able surgeons had tried the operation fairly, and the result has been most satisfactory. He had recently paid a visit to Jersey, and had examined four out of five cases which have recovered from the operations performed by a most able surgeon, Mr. Jones, and he was delighted with the result. He strongly hoped that the day would come when amputation of the thigh would no longer be performed—in King's College Hospital at least—for disease of the knee-joint, unless there were ample reasons for such extensive mutilation. This question, like others in surgery, only wanted fair inquiry, and its settlement will neither be advanced nor retarded by hebdomadal or monthly effusions from the pen of those who did not take the trouble to look carefully into the facts, both in favour of and against the operation. The author then referred to the method of making free incisions into the diseased joints, as advocated by Mr. Gay, and considered it to be a most important measure, and a step in advance in conservative surgery. He had seen some admirable results produced by incising joints freely, but he could not go so far as Mr. Gay, in supposing that the plan of treatment would obviate excision.—*Medical Times and Gazette, Dec.* 17, 1853, *p.* 642.

87.—ON SUPPURATION OF THE JOINTS FROM INFECTION OF THE BLOOD.

By W. Coulson, Esq. (Read before the Medical Society.)

In this paper, Mr. Coulson discussed the symptoms, nature, and treatment of a peculiar affection of the joints, which comes on after amputation, puerperal fever, operations on the genito-urinary organs, &c. This disease consists of suppuration within the joints, probably of an inflammatory nature, and generally ending in death. Not long ago, it was divided into nearly as many diseases as it had exciting causes; but the author remarked, that whether of puerperal, traumatic, or other origin, the disease is one and the same; or to speak more correctly, it makes part of one and the same constitutional affection. After having related some cases which illustrated the manner in which the disease may follow the introduction of a bougie for stricture, lithotrity, parturition, and glanders, the author proceeded to describe it, and commenced with one of the most interesting and important forms, namely, that accompanying parturition. Mr. Coulson first, however, observed, that the origin, the course, the symptoms, and the morbid anatomy of articular disease, produced by purulent infection of the blood, are of a peculiar kind, different in many essential particulars from what are observed in any other form of disease of the joints. If we are to regard the disease as mere local affection, it is impossible to understand the general symptoms which accompany the disease, its cause, or its rapidly fatal result, for these are quite different from what is observed in the most violent cases of articular inflammation, developed under ordinary circumstances. Everything, on the contrary, in the history of the disease points to a special origin; its main features are always the same, and although many cases may be attended by symptoms which would seem to indicate a variety of origins, and justify a distinction into several forms, yet these symptoms will be found to depend on accidental circumstances, and not to vary more in individual cases than we find occurring in examples of other diseases, which depend as this one does, on contamination of the blood.

The *pathology of the disease* was briefly, but clearly given. The joints affected during life, almost always contain more or less pus, and it bears no evident relation to the intensity of the local complaint, or to its duration. In many cases, purulent effusion takes place within a few hours after the first appearance of the local symptoms; and in many other cases, with so little pain, or tumefaction of the joint, as hardly to attract attention during life. The synovial membrane, however, generally presents traces of recent inflammation, though not of a severe degree; it is more or less injected, yet the false membranes of ordinary synovial inflammation are never found; one of the characters being the production of pus, in a rapid manner, with little or no inflammatory congestion of the tissues. In some cases, the synovial membrane has been found quite free from all trace of vascularity, or other lesion. This has been regarded as a proof of the non-inflammatory nature of the disease; but it seems to Mr. Coulson more rational to conclude, that the injection of the

vessels had disappeared after the secretion of pus; and it is known that purulent inflammation, under certain circumstances, is of a very evanescent character. In one case, the synovial membrane round the head of the thigh bone, was evidently injected before any effusion of pus had taken place, and it is easy to understand that this injection might have disappeared in a day or two, if the extremities of the capillary vessels had become modified by the changes which ensue on suppuration. The cartilages, ligaments, and other tissues composing the joint, are usually in a healthy state, for the disease is essentially a purulent inflammation of the synovial membrane. In many cases, the cartilaginous coverings of the bones are found to have been more or less eroded or absorbed, and in a very few examples the ulceration has involved the substance of the bone itself. The patient, however, is generally cut off before the disease proceeds so far. The peri-articular issues are often the seat of sero-purulent infiltration, or of circumscribed abscesses, which are also found in the muscles of the limb, and sometimes with very extensive disorganization of the parts.

Having thus pointed out the general morbid anatomy of the disease, Mr. Coulson proceeded to show that, *when it occurs in puerperal females*, it has generally been confounded, by accoucheurs, with puerperal fever, or described as a distinct complaint. This is an error. Puerperal women are often attacked by purulent inflammation of the joints, without any of the symptoms which really indicate puerperal fever; but the constitutional symptoms of the purulent infection on which the articular disease depends, have been mistaken for those of anomalous puerperal fever, which they resemble to a certain degree. On the other hand, puerperal fever, as is well known, is frequently complicated with purulent inflammation of the veins of the uterus, pelvis, &c., and in such cases there may be secondary articular disease, excited, not by the fever, but by the inflammatory condition of the venous tissues which accompanies it as a complication. Here there is purulent infection of the blood superadded to puerperal fever; the disease is a complicated one, the symptoms peculiar to each element become masked, and they may be readily confounded. Yet, by remembering the course and symptoms of uncomplicated purulent infection, we generally arrive at the truth. That purulent inflammation of the joints does not essentially depend on puerperal fever, but on some other condition, is shown by the fact that it occurs after abortion, in the early months of pregnancy, when improper means have been employed to evacuate the uterus, and when nothing resembling puerperal fever occurs. Here, there are all the essential symptoms of purulent infection followed by articular disease; and, although these unfortunate cases, from obvious reasons, are seldom investigated after death, yet the symptoms during life leave no doubt of their identity with purulent infection of the blood. Having noticed the peculiar symptoms which distinguish this form of purulent inflammation of the joints, the author insists on the necessity of not confining our *post mortem* examination of the affected joint, but extending it to other parts of the body. The true nature of the disease is then revealed, for circumscribed abscesses or purulent infiltrations are almost always found in the lungs, liver, kidneys, or brain, in the heart, in the cellular tissue or muscles, in the uterus or some of its appendages, and, finally, in the minute veins of the spongy tissue of the bones. It should also be taken into account, that this and other forms of secondary purulent inflammation of joints occur under circumstances quite different from those attending other forms of articular disease. General states of the constitution, such as those arising from gout, rheumatism, syphilis, scrofula, &c., have no influence here; nor can it be traced to any of the immediate causes of ordinary synovial inflammation, as external violence, cold, moisture, &c. It often attacks the healthiest individuals in the prime of life, after amputation of a limb, for example. Unlike other articular diseases of constitutional origin, it is never chronic, but always of a most acute character; and when connected with the puerperal state, it may appear to be epidemic.

In describing the *symptoms*, Mr. Coulson alluded to the shiverings which are one of the earliest symptoms of the disease. These are so severe, and recur in such a manner from day to day as successive depositions of pus take place, that experienced practitioners have mistaken the disease for intermittent fever. The rigors continue sometimes for half-an-hour, and are followed by slight perspiration; they may recur at determined intervals, but generally cease on the second or third day; after which they appear at very uncertain periods, or are noticed no longer. The fever also may

be mistaken for typhoid fever; but, as the author observes, no medical man accustomed to watch the slow development and gradual progress of true typhoid fever, could be deceived by the points of resemblance. In a great number of cases the respiratory organs are involved; the breathing becomes irregular and accelerated in paroxysms; there is a dry hacking cough, with subcrepitating râle; and, in some few cases, with the exhalation of a purulent odour from the breath. These paroxysms of oppressed and hurried breathing, with short, dry cough, are extremely characteristic; they are very often preceded at each return by rigors; and the author considers them as indicative of successive depositions of pus in the substance of the lungs. It is easy to understand that the symptoms may be modified, according to the peculiar circumstances under which the disease may have been developed in the first instance. It may arise, for example, after injuries of the brain, when the early symptoms will be complicated with, and masked by, those of cerebral irritation, or of actual inflammation of the meninges. In cases of this kind, the secondary deposit often occupies the substance of the liver to a great extent, and, if the cerebral symptoms be absent or slight, the disease may be mistaken for an acute affection of the liver. As for the puerperal form, Mr. Coulson drew a distinction which seems important for understanding the true nature of the disease. In many cases it appears as a complication of puerperal fever, especially in that form depending on uterine phlebitis, and then all the early symptoms are masked by those of the puerperal fever, from which it is almost impossible to separate them. But, in other cases, although the woman has been recently delivered, she does not present the ordinary symptoms of the fever just mentioned; she appears to be doing well for several days; there is no tenderness or tumefaction about the lower part of the belly; but after a few paroxysms of shivering, with anxiety of countenance and acceleration of the pulse, the joints suddenly become painful, the tongue gets dry, and the symptoms of purulent infection follow the course already described. In this uncomplicated state, the disease receives no peculiar stamp from the puerperal state, but presents exactly the same symptoms and runs the same course as it does when affecting males, after injuries to, or operations on, the genito-urinary organs. There is, however, this difference in the results, that the disease is of a much more fatal character in puerperal females than in males,—a fact admitting of explanation from the circumstance of its being so frequently complicated in the female with puerperal fever; whereas, in the male, it arises from laceration of the urethra, irritation of that canal or of the bladder, and from other injuries which are not in themselves of a dangerous character. Puerperal synovitis in females recently delivered is a very fatal disease. Dr. Merriman, Professor Cruveilhier, and other writers, state, that they never saw a patient recover. The author, however, quotes a case of recovery related by Mr. M'Whinnie.

The *nature of the disease* was next discussed; and on this point, Mr. Coulson, after repeating the opinion which he gave many years ago, in his work on Diseases of the Hip-joint, observes: "I would add from further experience, that I now believe the contamination of the blood to depend on the admixture of pus, as such, circulating with the vital fluid. The pus is not absorbed, but admitted directly into the circulation through some breach of surface." The following reasons may be adduced in support of this view:—In the great majority of cases the formation of pus in some tissue primarily affected can be proved by dissection. A few cases are on record where no trace of pus could be discovered in those tissues supposed to be the primary seat of disease, and hence it has been argued that these cases are sufficient to justify us in removing the disease from purulent infection of the blood. To this it may be answered, that the identity of course, symptoms, and results in various cases, naturally leads to the inference of an identity of immediate causes; and that as our knowledge extends under the influence of more careful and accurate *post mortem* examinations, numerous cases are now shown to belong to this class of purulent infection; whereas, formerly, they were either inexplicable, or referred to causes from which no natural explanation of their phenomena could be obtained; thus Dr. Marshall Hall was unable to understand why the eye should become inflamed after parturition, and still less why inflammation of the globe should prove rapidly fatal. These points are now satisfactorily explained by showing, that such inflammation of the eye is not peculiar to puerperal females, but that it occurs in other cases of purulent infection. Again, the typhoid symptoms under which many patients sink after amputation, after trephining, &c.; and the abscesses discovered

after death in their lungs, livers, &c., did not admit of explanation, until it was shown that suppurative inflammation existed in all these cases in the cancellous structure of the bones. The same remark applies to the few cases in which puerperal disease of the joints existed without any morbid alteration in the structure of the uterine veins. This exemption of the uterine veins has been considered sufficient by accoucheurs to reject the theory of purulent infection; but the surgeon not accustomed to confine his investigations to the uterus alone, would not have remained satisfied unless every other organ in the pelvis and the whole genito-urinary system had been carefully examined. Inflammation of the mammary veins or of those of the rectum is just as capable of exciting purulent infection as inflammation of the vessels of the uterus or its apendages. If these views be correct, it is evident that the treatment of purulent synovitis from infection of the blood becomes a secondary consideration. The surgeon's chief efforts should be directed towards counteracting the poisonous condition of the blood which has given rise to the constitutional disease. The local malady is merely one of the effects of the constitutional one. Various modes of treatment, both general and local, have been tried by the author and by other practitioners, but it is to be regretted that none have been attended with any benefit.—*Med. Times and Gazette, Oct.* 22, 1853, *p.* 436.

88.—TREATMENT OF ANCHYLOSIS AND CONTRACTIONS OF KNEE AND HIP-JOINTS BY FORCED RUPTURE.

By Dr. Philip Frank, Manchester.

[In these cases the object of the surgeon is of course to restore the mobility of the joint. To effect this, even in favourable cases, however, no small degree of patience and perseverance is necessary.]

If during the treatment of seemingly favourable cases a tendency to inflammation should become evident, it would be more judicious to surrender the joint to anchylosis in a position best adapted to the use of the extremity.

Passive motion methodically instituted by means of the screw of the apparatus, forms the simple but efficacious proceeding for restoring the mobility of the joint.

At the commencement of the treatment, these movements are attended with considerable pain, which are without exception more painful when attempted by manual force, the machine having been laid aside.

As soon as the articular surfaces have become accustomed to mutual friction, the movements can be practised at shorter intervals, and be continued longer at a time.

The movements are only painful at the commencement. We have made the same observation when the patient begins to walk without wearing the machine, the first stage only of each daily promenade being attended with discomfort. It is also highly recommendable to institute forced movements of the joint at different intervals under chloroform. We are thus enabled, by producing a freer extent of motion, to rupture new-formed adhesions, thereby accelerating the cure. If the case was one of real anchylosis, and adhesions between the articular surfaces had to be ruptured by the operation, each movement of the joint was attended with more or less loud crepitation.

The roughness of the articular surfaces is smoothed away by the passive motion instituted in and out of the narcosis, and thus the crepitus which it gives rise to gradually ceases to be audible; and in one case where I paid particular attention to this phenomenon, the pain attending movement receded, in proportion to the diminution of the crepitus.

During the whole course of the treatment the patient is permitted to walk about as much as he is able. As soon as it is considered judicious, the machine is dispensed with for some hours in the day. He is then directed to practise active motion of the joint. He is also enabled to institute passive motion, supporting himself by the back of a chair, and bending the joint by the weight of his body; as before mentioned, these exercises must be practised with the greatest regularity.

Baths, the cold douche, and galvanic electricity, as well as friction, may be employed, as powerful coadjutors of the treatment.

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The treatment of contraction and anchylosis of the hip-joint is universally acknowledged to be one of the most difficult and laborious tasks imposed on the

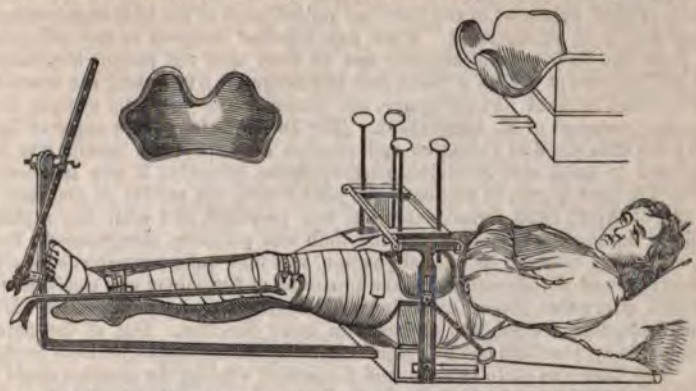
surgeon. In former times, when the pathology of the disease was obscure, and the idea of spontaneous luxation of the femur was constantly haunting the minds of practitioners, in cases where most generally but simple contraction or anchylosis existed, either no treatment at all was attempted, or the methods employed were as irrational as they were inefficacious. The pure orthopœdists of modern times can only boast of success in cases of simple contraction without anchylosis.

Dieffenbach would have been undoubtedly more successful if his orthopœdic treatment had been more judicious. M. Langenbeck and M. Buhring have succeeded by means of forced rupture and an orthopœdic after-treatment, as ingeniously contrived as it was judiciously regulated, in obtaining results which the most sanguine could not have hoped to surpass.

In M. Langenbeck's Clinic we have only had occasion to observe cases where the femur stood in flexion, adduction, and rotation inwards. The difficulty of fixing the pelvis, the rigidity of the powerful flexor and adductor muscles of the femur,—the extension of which, even in the most profound narcosis, can only be effected by considerable force,—form great impediments to the practice of forced rupture of the anchylosis; in addition to which, great caution is necessary, to avoid fracturing the neck of the femur so often in a state of carious disease. But, in cases of firm, osseous anchylosis, if it should be found impracticable to obtain the melioration of a highly abnormal position of the femur by any other means, we are not inclined to regard this advantage as too dearly bought, even by a fracture of the neck of the femur. This deduction is not only based on theoretical views, the nature of which is obvious, but on unequivocal practical evidence. We particularly refer to the highly interesting case described by Buhring, where the patient, dying of typhus two months after the forced rupture of the anchylosis, (the femur had stood in a high degree of flexion, adduction, and rotation inwards,) the *post-mortem* examination discovered the head of the femur united by osseous anchylosis to the acetabulum. The neck had been broken by the operation and was entirely absorbed; but the upper end of the shaft of the femur formed a false articulation with the anchylosed head. The patient had been able to walk perfectly well, motion to the extent of forty degrees being practicable. We do not doubt that every one would prefer a simple subcutaneous fracture of this kind to the dangerous practice of sawing through the neck of the femur, as proposed by Rheabarton, from which, even if successful, no better result could be expected.

We will now proceed to describe the method of treating contractions with anchylosis of the hip-joint, the femur standing in flexion and adduction, as we have seen it practised by Langenbeck. Forced extension, flexion, and adduction are practised under chloroform, the pelvis having been first firmly fixed by several assistants. The patient is then placed in the wire-frame of Bonnet, in order to maintain the normal position of the pelvis, and the degree of extension and adduction of the femur obtained by the extension. The patient is seldom able to remain long after the operation in the apparatus of Bonnet, particularly not, if any degree of extension is practised by the screws at the inferior end; generally the patient has to be taken out of the apparatus. The flexors and adductor muscles then re-contract, and the pelvis on the affected side again rises upwards. The best practice which can then be adopted is to fix the pelvis on a mattress by means of towels fastened to the bed, and then to keep the healthy leg extended. This position is attended with no discomfort to the patient, and is highly effectual in maintaining the normal position of the pelvis. As soon as the irritable sensibility of the joint has subsided, the apparatus of Bonnet can be again had recourse to; and if all adhesions were ruptured by the first operation, perfect extension can be attained by its instrumentality. In nearly all cases, a repetition of the forced rupture will be found necessary. The apparatus of Bonnet will, as before mentioned, generally suffice to attain the perfect extension of the femur. But it will be found insufficient to remedy the adduction, which is always the most difficult to overcome, as well as to maintain the fixed position of the pelvis. It was, therefore, necessary to devise an apparatus to supply these defects,—an apparatus which could effect and at the same time maintain the abduction as well as the extension of the femur, and also, by perfectly fixing the pelvis, to allow of active and passive motion of the joint being freely and effectually executed. The machine, constructed according to the directions of M. Langenbeck, has, by fulfilling both these indications, rendered invaluable services

towards restoring the normal functions of the joint after forced rupture. The construction is as follows. The pelvis rests with its inferior surface on a padded plate of sheet iron, moulded exactly to its form after a model of plaster of Paris. This plate reaches on both sides up to the inferior margin of the large trochanter.



Two concave beak-like processes stretch forwards and upwards from its anterior margin, to support the tubera ischii. This contrivance is fastened to a strong wooden board, which, at about three inches high in front, forms an oblique plane towards the head of the bed. The pelvis is fixed on this apparatus by means of two pellottes, made of sheet iron, and well padded. These embrace the superior and external part of the ossa ilii. and must be moulded according to a model of plaster of Paris or gutta percha. These pellottes are pressed against the pelvis above and on both sides, by screws sustained by an iron bridge, extending across the pelvis. An iron bar runs from the wooden framework to the foot of the bed, and is here bent at right angles. By the means of an iron lever attached to its upper extremity, the limb can be maintained in any position, and moved in any direction required.

That degree of pressure necessary to render the pelvis motionless is not tolerated by the patients without their being previously narcotised; but a moderate degree of pressure suffices to fix the pelvis so firmly that motion of the limb can be induced to a considerable extent without any dislocation of the pelvis ensuing. The patients can then pass three or four hours a-day in the machine without any discomfort, the limb remaining extended and abducted a part of this time, the remainder being occupied by passive and active motion. The patients are then allowed to get up and walk about as long as the strength of the limb permits; besides this, they lie several hours a-day, sometimes during the night, in the apparatus of Bonnet. Once a fortnight the patient is narcotised by chloroform, and the pelvis having been perfectly fixed in the machine above described, forced flexion, extension and abduction, are instituted. M. Langenbeck has thus succeeded in a great number of cases, not only in restoring the straight position of the limb, but also the normal functions of the joint. In one case it was necessary to divide the adductor longus muscle, as it obstinately resisted extension. The adductor muscles of the femur generally oppose a great resistance to extension under the influence of chloroform. M. Langenbeck relates a case where the adductor longus muscle snapped asunder on forced abduction being instituted. In the after part, two cases of contraction and anchylosis of the hip joint are related, one of which we have selected on that account, because the limb had been subjected, during a course of ten months, in a celebrated orthopœdic institution, without the least result being obtained. It was undoubtedly a case of true osseous anchylosis, and is now perfectly cured. Such a case is most adapted to testify to the superiority of M. Langenbeck's method. It would be well if the pure orthopœdists would deign to take a lesson from it.

The following cases are selected from a great number at my disposal, and I hope that they may serve to illustrate the method employed, and the results to be expected therefrom :—

July, 1848. ——, wool-merchant in Glasgow, was attacked, a week after a gonor-

rhœic infection, by an inflammation of the knee-joint, which confined him to his bed during the space of four months, in consequence of which a contraction and spurious anchylosis intervened, so that the joint remained motionless at an angle of 140 degrees. In February, 1849, an apparatus was employed with the intent to produce gradual extension of the joint, but violent pains of the joint supervening, the attempt had to be relinquished. After this, repeated relapses of the inflammation took place, the limb became atrophic and so weak that the patient was unable to walk half an hour at a time without pain and fatigue. After using the warm-baths of Wiesbaden without any advantage, the patient came to Berlin and put himself under the treatment of M. Langenbeck. The knee was bent at an angle of 140 degrees; the tibia stood at abduction and rotation outwards; the patella was firmly anchylosed in fossa inter-condylica, near condylus externus; it was impossible to produce the least degree of motion in the joint, which was painful on pressure. On the 23d of April, 1850, forced extension was practised, and after the rupture of seemingly strong fibrous adhesions, the limb was perfectly straightened; the patella, which had resumed its normal position, was now quite moveable, scarcely any reaction followed the operation, and the apparatus of Stromeyer was easily tolerated. A month afterwards, forced extension and flexion was again repeated. During the narcosis, free motion was practised in every direction. Out of the narcosis, flexion could be practised but to a small extent by the apparatus, without producing pain. The limb was quite straight, and the patient wearing the machine could walk with the greatest ease and facility. In the summer he used the warm baths of Teplitz; in the autumn, the patient returned to the care of M. Langenbeck. Forced movements were repeatedly practised in the narcosis, and the exercise by means of the machine was practised daily with undeviating perseverance. The motion of the joint was thus rendered progressively freer, and after the application of several moxas, free from pain. In November, the patient could walk perfectly well without the machine, and could also practise slight active motion of the joint. The muscular power of the limb gradually increased, so that, at the commencement of the year 1851, the patient could dance with ease and grace—an exercise which he continued to practise through the rest of the winter. In May he returned, perfectly cured, to England. A short time ago, I learned, on inquiry, that the patient still enjoys the perfect use of the limb.

Case 2.—Christian Rostock was attacked by an inflammation of the knee, during which, under violent pain, extending as far as the inferior half of the femur, a rectangular contraction of the joint was established. A great quantity of matter was discharged from an incision made just above the internal condyle of the femur; the opening assumed a fistulous nature, and small pieces of bone were frequently mixed with the secretion. On the 16th of June, 1852, the patient was admitted into the hospital; the right knee was bent at right angles; further extension was impossible; a slight degree of flexion, accompanied by crepitation, was practicable. The tibia was dislocated on to the external condyle of the femur, and slightly moveable; the condyles of the femur were enlarged, and painful on pressure. A probe introduced through a fistulous ulceration just above the internal condyle, came in contact with the rough bone. Forced extension during the narcosis having been practised twice, the knee was rendered perfectly straight. The re-action was inconsiderable; on account of the subluxation of the tibia backwards, the machine of Bonnet was employed, and the reposition nearly perfectly effected; the fistula above the internal condyle of the femur was altogether closed a month and a-half after the operation. When the patient was dismissed, on the 23d of September, passive motion could be practised by the means of the machine of Stromeyer to any extent without pain; and the patient, who, on being admitted to the hospital, was not able to move without the aid of crutches, could now, wearing the apparatus, walk for any length of time with the greatest ease and facility. He continued to practise the exercises at home with the greatest perseverance, and, on presenting himself in the Clinic, in February, 1853, he affirmed that he was able to make long tours without the machine, the normal functions of the joint being nearly perfectly restored.—*Medical Times and Gazette, Nov.* 5, 1853, *p.* 473.

89.—ON THE EXCISION OF JOINTS.

"The excision of joints forms one of those magnificent improvements in the practice of surgery by which the bold men of the last century have made themselves and their profession illustrious, and by which they have contributed so much to the public weal, thereby preserving the means of prehension and progression to those who, had they lived in former times, would have been either unnecessarily deprived of those members with which a man labours for his bread, or left to linger hopelessly until death should relieve them of their sufferings."

These exulting remarks, from the pen of Mr. Weeden Cooke, are appended to a case of excision of the ankle-joint performed by Mr. Thomas Wakley, at the Royal Free Hospital in 1847; and well might Mr. Cooke rejoice at the immense benefit bestowed on suffering humanity by the new, improved, and humane practice of excision of joints, for this benefit has, since that period, been considerably increased, and has spread its cheering influence through the length and breadth of the land. The particular case to which Mr. Cooke alludes, and in which the astragalus and os calcis were removed, is well calculated to inspire confidence in the practice referred to, as Mr. Wakley's patient has been watched through the course of years and found to have recovered the almost perfect power of locomotion. Mr. Wakley gave an opportunity to the fellows of the Medical Society of London of appreciating the results of the important surgical operation which the patient had undergone, and the latter convinced all present by walking up and down, and by exhibiting the firm cicatrices about the foot, that the amount of bony substance which may with permanent benefit be excised from the tarsus was not conjectured before Mr. Wakley's operation.

Among the benefits of conservative surgery we would certainly include the practice, very generally adopted in our times, of diligently searching after dead bone in disease of the elbow, ankle, or shoulder. We have seen large portions of necrosed bone removed from these joints—so large, indeed, as to allow the proceeding to be ranked among the resections of a portion of the articulation. Often, indeed, have we seen patients placed on the table, and the operation for dead bone undertaken, when the ankle, elbow, or knee looked as if no course was left but amputation. The gouge, however, generally succeeded in dislodging a large piece of carious or necrosed bone, by which measure healthy action was excited, and the joint eventually restored to efficiency. It is particularly about the os calcis, the astragalus, and the cuboid bone, that such operations are frequently demanded; and not longer back than the 22d ultimo, we saw Mr. Cock, at Guy's Hospital, remove a considerable quantity of carious bone from these localities, in a boy whose foot presented all the symptoms of caries of the tarsus in an aggravated degree. The little patient has done remarkably well; the foot is now in a very favourable condition.

There are two joints, however, the excision of which has given rise to animated controversies—viz., excision of the head of the femur, and resection of the whole knee-joint. As to the first operation, it is now proved, by Mr. Fergusson's cases, that it is not only justifiable in appropriate instances, but highly beneficial, as life has been saved and the motions of the hip preserved. Of course, all cases of hip-joint disease are not adapted for the operation, and we have ourselves seen an attempt to remove the head of the femur when this process was completely absorbed; but a careful investigation of the case in hand will pretty constantly suffice to teach the surgeon whether he should venture on this resection or not.

Hardly less dispute has been excited by resection of the knee-joint, and as some cases ended fatally, a certain amount of odium has been cast upon the operation. But it should be remembered that Mr. Fergusson's patient, whose case was reported in this journal (see *Retrospect*, vol. xxvii.), is now in a fair way of complete recovery, and that the cases which Mr. Jones, of Jersey, brought before the Medical Society of London when the patients were presented to the fellows, are well calculated to bring the operation into favour.

There is another joint the excision of which has very recently been attempted in two hospitals of this metropolis—viz., the wrist; but here the results have, as far as we know, been less favourable than was expected; and yet it does not appear very clearly why the principle which applies to the elbow and ankle should not hold

when the carpus is concerned. However this may be, it will be seen, that the results attending the excision of the wrist-joint are not encouraging.

The most marked success in excision of joints, wholly or partially, has been obtained about the elbow and the foot; as to the latter, we have already alluded to Mr. Wakley's operation, and would add that we frequently see in the theatres of our hospitals, either a portion of or the whole os calcis removed with the best effect. Other bones of the foot are occasionally excised, the cuboid, for instance, of which operation Mr. Coulson has given a very interesting instance in a paper read before the Medical Society of London. ('Lancet,' vol. i. p. 121, 1851.) Mr. Coulson has had several opportunities of repeating these operations, but with varied success, some patients being permanently benefited, and others obliged eventually to submit to amputation of the leg. As regards extreme measures we would just state, that we have known a patient upon whom Chopart's operation was first performed, and who had finally his thigh taken off, as removal of diseased portions of the limb at different periods, from below upwards, did not arrest the progress of the strumous tendency.—*Lancet, January* 14, 1854, *p.* 31.

90.—CASES OF EXCISION OF THE HEAD OF THE FEMUR.

[The patient in the first case, a boy of 8 years old, was admitted into St. Bartholomew's Hospital, under the care of Mr. STANLEY, in June, 1852. He had suffered from diseased hip for several years. Abscesses had formed and burst, and the joint was surrounded by fistulous openings. The head of the bone was also dislodged from its normal position.]

The patient was brought into the operating theatre, July 22d, 1852, and Mr. Stanley then stated that he considered himself fully justified in excising the head of the femur, if that process, when fairly brought into view, were found carious. Mr. Stanley stated, before operating, that he would raise a flap over the head of the bone, and be guided by the state in which he found the part. If in a carious state, he intended to remove it; if not, the patient would experience no prejudice from the operation, which, on the contrary, on the principle of the benefit to be derived from free incisions into joints, would be likely to produce some advantage in letting out the matter, and freely opening the articulation. The child's life, which was evidently in danger, might even thus be saved.

After the patient had been narcotized by chloroform, Mr. Stanley made a semicircular incision over the head of the bone, and raised the flap. It was now found that the greater depth of the principal abscess was situated behind the neck of the bone, the amount of suppuration being very considerable. The head of the femur was then separated from the shaft by means of the saw and the cutting forceps very cautiously used, the latter instrument dividing the parts without effort, as the osseous texture had become very soft. The head of the femur was found completely decayed, carious, and disorganized, evidently not admitting of any reparative action; it was exactly as if necrosed, for the suppuration had penetrated the cancelli of the bone. No vessels required any ligature, and Mr. Stanley expressed his opinion that, by the above-described excision, the life of the patient, which must evidently soon have given way, was very likely to be saved. The parts were neatly brought in apposition, and for some time after the operation the little patient was desired to lie on his chest, in which position it was found that the limb lay quite straight, being retained *in situ* by a splint well padded with cotton wool in the vicinity of the hip.

The boy had, previous to the operation, been given good diet, cod-liver oil, tonics, &c.; these were continued after the excision, and the patient progressed very favourably for the first few weeks, the wound granulating very energetically, and the general health improving visibly. It is interesting to notice how different, and how very far from exhausting, is the purulent discharge from a clean wound, unirritated by carious bone, as compared with matter profusely poured out from sinuses and fistulæ kept up by disorganizing osseous tissue. After a few months of careful treatment, good diet, and appropriate medicine, the patient was able to get up and go about the ward on crutches; the old fistulous apertures healed up, and no open

wound was left but the remains of the incisions made for the removal of the head of the bone. The progress after the first six months was, however, very slow, and a small portion of the wound was extremely tedious in healing, although some amount of motion was regained in the hip. The boy was at the same time gaining flesh, and after he had remained just twelve months in the hospital, Mr. Stanley thought, in the summer of 1853, that the change to the sea-side would contribute to the child's final recovery. The latter was therefore sent to Margate just one year after the operation, some discharge remaining about the unclosed wound of the hip.

The patient's general health gained remarkably by the removal from the hospital to the bracing air of the coast. He remained at Margate for the summer months, and then returned to his parents; and we learn by the last accounts of him that he has grown strong, but that the parts about the hip are not as yet completely cicatrized. It will be clearly seen by this case that no final and satisfactory results should be expected after the resection of some of the larger joints, before at least one year or eighteen months.

[The patient in the following case, admitted into University College Hospital, under Mr. Erichsen, Oct. 31st, 1853, was also a boy aged 14. Eight years and a half before admission he was pushed down a flight of steps, and has been lame since, but until two months before admission had never felt any pain in the hip; at that time an abscess formed and burst. The limb was found three inches shorter than its fellow, and all the other symptoms were those of extended mischief in the hip-joint. His appetite was bad and he perspired profusely at night, but there was no disease of the lungs.]

The boy was ordered good diet, and the following medicines: syrup of iodide of iron, one drachm; iodide of potassium, two grains; infusion of quassia, one ounce; to be taken three times a day; also two drachms of cod-liver oil, twice a day. Topically, a linseed-meal poultice was applied to the ulcerated portion of the thigh.

[The state of the patient's health was much improved at the end of the week, and on more complete examination it was found that the head of the bone was dislocated on the dorsum of the ilium.]

About ten days after this examination, Mr. Erichsen passed a long probe through the highest and largest termination of the fistulous tracts, whilst the boy was under the influence of chloroform. The instrument went to the outer side of the prominence supposed to be formed by the trochanter; a narrow bistoury was then glided down to it through the integuments and soft parts, directly over the extremity of the protuberance. The probe was then passed into the new opening, through which no pus escaped; it came in contact with a hard surface resembling bone, and covered with dense tissue and plastic matter, but no exposed bone could be felt.

A little feverishness followed this examination, but the unpleasant symptoms were removed by appropriate remedies, and on the 23rd of November Mr. Erichsen proceeded to operate.

The boy was narcotized by chloroform, and the affected thigh being carried over the opposite limb, Mr. Erichsen made a T-shaped incision over the outer part of the trochanteric prominence, and the bone was laid bare by a little dissection. The head of the femur was then turned out of its bed by carrying the limb still more across the abdomen, and using it as a lever. When the exposed bony process had been well freed from soft parts, a section of it was made with a saw. The piece of bone being removed, a cavity containing pus and several pieces of detached bone, was observed in the neighbourhood of the acetabulum, which latter cavity was partly filled up with plastic matter, but presented a small, slightly rough substance at one point. The latter was scraped with the gouge, and a few bleeding vessels having been tied, a piece of wet lint was placed carefully at the bottom of the wound to arrest the rather free oozing; the whole solution of continuity was then covered with thick large water-dressing, a pillow placed under the leg and the boy removed to bed. The limb was soon afterwards fixed to the long splint, with two iron brackets substituted for the wood in the situation of the wound.

The inflammatory fever ran somewhat high, and the boy complained of much pain for the first few days. The discharge was at the outset thin, but soon became laudable, though now and then a little fetid, and cod-liver oil with occasional anodynes was now given at night.

The patient, one week after the operation, was attacked with severe pain in the elbows, which shifted afterwards to the knee, ankle, and toe on the right side. The progress was, however, favourable; but on the ninth day the right knee was extremely painful, and on examination found much swollen. This, however, went off in a few days, and on the nineteenth day the patient was found gradually improving in health; he had certainly gained flesh since the operation, was free from pain, and moved easily in bed. The wounds made for the removal of the head of the bone were almost healed, and the discharge came principally from a sinus in its vicinity.

At the present time, about two months after the operation, the boy is still in the hospital; the wounds made by the knife are healed, but the sinuses keep discharging a small quantity of pus. Here it may be said that the patient's life was at a very low ebb, and that the operation has been instrumental in saving him from his impending fate.—*Lancet, Jan.* 21, 1854, *p.* 62.

91.—ON EXCISION OF THE KNEE-JOINT.

By G. M. Jones, Esq., Surgeon to the Jersey Hospital.

[This formidable operation was for a long time strongly opposed, and it is only very recently that advocates could be found for it. It has, however, been sanctioned by Park, Crampton, Moreau, and Syme, and lately Mr. Fergusson seems fairly to have taken it in hand, and no doubt will test its value to the very utmost. In our last volume will be found several papers on this operation, with cases by Mr. Fergusson, Dr. Mackenzie, Mr. Jones, and others.]

The limb grows after the excision of the articulating surfaces, as is proved by three of the author's cases, children under ten years of age. This statement is confirmed by the history of Mr. Page's case. The operation is performed as follows:—A lateral incision along each side of the joint, and a transverse one immediately over the centre of the patella; the flaps then dissected upwards and downwards, and the patella removed; the joint ends exposed, and so much of the femur and tibia removed as was found in a disorganized state, the bones being thus placed in juxta-position, and secured in a suitable box. Mr. Mackenzie, of Edinburgh, suggested the preservation of the patella, that bone being held to one side by a flat and turned up spatula over the inner condyle, and to this improvement the author gives his assent. It was soon, however, allowed to fall into disuse; for from the time of Mr. Filkin's operation until 1850, a period of eighty-eight years, but twelve cases are on record. In this year, however (1850), it was revived by Mr. Fergusson. A table of thirty-three cases was presented for the consideration of the Society, showing that death had followed the performance of the operation in eight cases only. The greater success attending Mr. Jones's cases was due to the healthy situation and the airy wards of an hospital situated away from buildings near to the sea-shore. He also relies upon stimulating treatment *immediately* after the operation. The objections to the performance of the operation are twofold—first, its severity, the shock to the constitution, hemorrhage, &c.; secondly, we are told that union does not always take place. To these the author replies that the operation has now been done many times successfully, and that the limb has proved more serviceable than the most perfect artificial support that could be manufactured. He relates a case in which, after the performance of excision of the knee-joint, disease commenced in the opposite hip. Upon recovery, the patient found the limb, which had been subjected to operation, become the stronger and the more useful. The operation must not be performed indiscriminately in all cases. It is not for those commonly called "white swelling," and it should not be delayed until the strength has been too much reduced.

[Mr. Fergusson said it was proved that almost as much success had attended this operation as that of amputation of the thigh. He observed:]

Resection of the knee-joint was an older operation than that of the elbow, and also as successful. It was remarkable that this proceeding should have remained in abeyance for so long a period, until he revived it, seeing that three out of the six cases operated upon in the early part of the present century had been successful. His own conviction was, that it was a proceeding as justifiable as amputation of the *thigh*, and far more beneficial, inasmuch as it saved the limb. Perhaps it was too

much to say that this operation would supersede amputation in all cases of disease, even of the elbow-joint; but in answer to the objection, that resection was performed only in selected cases, it might be stated that in the first case operated upon by Mr. Park, it was regarded as unfavourable either for amputation or resection, yet the patient did well. It had been sufficiently proved that the limb did grow after resection had been performed.—*Lancet, April* 22, *p.* 445.

[At a meeting of the Medical Society, November 19th, 1853, Mr. SMITH presented two patients of Mr. Jones's to the notice of the society, who had recovered from the operation of excision of the knee-joint.]

One of them, a young man of twenty, walked up the room without any artificia appliance whatever, and was able to use his limb very extensively, it being perfectly straight, and only half an inch shorter than its fellow, so that it is not necessary for him to wear a high-heeled boot. The knee is anchylosed, there being hardly any movement. The man is in perfect health, and stated that he had walked as far as six miles together, and is now enabled to carry on his occupation, which is that of a house-painter. The other was a boy, aged twelve, on whom the operation of excision had been performed seven months only. The limb was quite straight as in the other, and there was perfect bony anchylosis at the knee. In this instance, however, the patella had been left so that the boy had full power of lifting the limb, inasmuch as the attachment of the great extensor tendon was left. It was noticed that this little boy walked up the room with the aid of two sticks. This was explained by the existence of a circumstance which rendered the case very interesting. This was a dislocation of the hip of the opposite side, which had occurred spontaneously from disease some few weeks after the operation. Fortunately, however, the disease in the hip had become arrested, and the patient, although he ordinarily used two sticks, was enabled to walk, resting upon the arm of another person. He was daily getting strength, and doubtless in time would be able to progress with facility. If, however, amputation of the thigh had been done, and he used a wooden leg, the dislocation of the hip on the other side would have prevented progression; the superiority, therefore, of excision of the knee-joint was doubly shown in this example.

Mr. Jones had operated in six cases; in five of these the operation was successful. The sixth would have been equally satisfactory, but the patient, a lady, died ten days after the operation, of dysentery, which was then prevalent. One of the patients he had operated upon could run well up a ladder, and another play at foot-ball. He had brought the two patients, just exhibited, up to London to seek the opinion of the more experienced surgeons here, with a view to determine whether the operation were a legitimate one, or should be abandoned.—*Lancet, Nov.* 26, 1853, *p.* 502.

92.—CASES OF EXCISION OF THE KNEE-JOINT.

By DR. W. KEITH, Aberdeen.

[The following interesting case was discharged cured by Dr. KEITH.]

John Hay, aged 9, from Old Aberdeen, of small stature and delicate look, but of a happy and cheerful disposition, was admitted on the 7th of Nov. 1853, into the Royal Infirmary, Aberdeen, with scrofulous disease of the right knee-joint, which has existed, better and worse, for twelve months. The leg is fixedly bent on the thigh at an acute angle, the heel almost touching the nates. The knee-joint is much enlarged generally; the head of the tibia and condyles of the femur evidently expanded; the capsule of the joint is distended and feels pulpy. There is tenderness on pressure on every part of the joint, and actual pain on any attempt being made at movement or extension. The diseased limb, owing to wasting, looks, as a whole, diminutive beside its fellow. His general health is good, though he is reported to have had occasional attacks of diarrhœa within the past three months. His spirit is buoyant, and he earnestly desires to save his limb.

Nov. 22. It was agreed on consultation that excision of the joint should be practised in his case.

On Saturday, 26th Nov., at 10.30 A.M. Under chloroform. An incision was made from the inner to the outer condyle of the femur, in a semicircular line, the point of the flap reaching to the head of the tibia, the ligamentum patellæ being there cut

through. The flap, including the patella, was dissected from all its connections, to a line fairly above the condyles; the lateral and crucial ligaments were cut, when the utmost facility presented for sawing off the condyles of the femur. The articulating surface of the tibia was then sawn off from behind forwards, the line of section not reaching so low as the fibula, two inches in whole being the exact measure of the two portions of bone removed at the operation. The face of the patella was implicated so far as to have become partially adherent to the trochlea of the femur, and was to some extent denuded of cartilage. It was therefore smoothed by the removal of a thin slice by the aid of a farrier's paring knife; the remaining portion of the patella being evidently healthy, was allowed to rest in situ. Two small arteries only required ligature. Indeed the operation might be designated as bloodless, so little hemorrhage having occurred. The wound was closed by six stitches, dressed with ointment, compresses and bandage, and the limb extended to the straight without any difficulty—laid and secured in a well-fitting Macintyre's metal fracture frame. The whole proceeding may have occupied five minutes. He was put to bed still under the influence of the chloroform. To have eight drops of laudanum as soon as he wakes.

7 o'clock P.M. Has slept quietly and with little interruption since the operation; says the limb is quite easy; not a drop of blood has oozed from the wound. Has taken soup in small quantities, but feels squeamish, probably from the effects of the chloroform.

[On Monday, 10th Feb. (76th day) the wound was firmly cicatrized, and the joint stiffened firmly by anchylosis, and on the 82nd day he was daily going about.]

Remarks.—The mode of operating was that recommended and practised by Mr. Richard J. Mackenzie of Edinburgh, the simplest and most efficient that can well be conceived. A semilunar incision extending from condyle to condyle and bisecting the ligamentum patellæ, gives, on dissecting the flap upwards, complete access to the whole joint, and admits of the easiest possible disarticulation, and removal of the diseased portions of bone. No portion of integument was dispensed with, and it is clear never should be. The cicatrix now shows a mere line. The ligament of the patella is united where it was cut as firmly as if never divided. The patella was spared in its seat, and adds by its presence not only to the symmetry of the limb, but also to the solidity of the joint, and to the firmness of those attachments between the thigh and the leg so necessary in progression, and at the same time so needful to preserve the limb straight under the weight which it will in walking have to carry. The patella is seldom if ever primarily or extensively diseased, so that all that can usually be required is to pare a thin slice from its articulating surface, and this is very easily accomplished by the curved paring knife.

In the operation, as a whole, the cut surface exposed was less by one-third than in a flap amputation of the thigh. Bleeding there was none, and shock there was none. Less of either than was ever witnessed by the operator at any amputation he had ever seen. The period on the table is brief as compared with what is occupied in taking up the numerous arteries after amputation for chronic disease of a knee-joint. Two minutes might suffice for completing excision of the knee-joint and closing the wound permanently, but it were hopeless to make any such attempt with amputation; and it is important, on the patient's account, to keep him as short a time as possible on an operation table.

The after condition of John Hay proved the entire absence of shock to the system; no fever followed; his appetite was unimpaired, and any suppuration that occurred was trifling in the extreme.

As to the nature and period of his confinement after the operation, he was able on the sixteenth day to sit up in bed; on the sixty-second day he was allowed to dress and go about on crutches, bearing part of his weight on the right foot; on the eighty-second day he was so firm on his feet, and so sound about the joint, as to be consideredn o longer under surgical care, a period which any surgeon would gladly accept as a favourable average, if obtainable after amputation of the thigh in a scrofulous subject.

The important question has been asked,—Should the bones be united by anchylosis after excision of the knee-joint, or should any attempt be made to form a moveable or artificial joint?

In confirmed scrofulous disease of the knee-joint, anchylosis, if accomplished with

the limb nearly straight, is very justly considered a favourable termination to the case—the very fixing of the joint affording a security against the recurrence of like disease in the same joint. Considering, then, the kind of constitution that is so likely to exist in the subject requiring excision of the knee, the risk would be great indeed that diseased action would immediately commence where the denuded head of the tibia required to form a socket in which the end of the shaft of the femur was to roll and rotate, and that also while it had to support the superincumbent weight of the whole body in locomotion.

There cannot be a doubt, therefore, that anchylosis must be secured in every instance to ensure safety to the limb, and *solid* comfort to the patient. The femur and tibia being both sawn across, callus readily unites them, and the patella, intentionally denuded of cartilage, occupies a most important, as well as favourable position, for forming a strong connecting link or band between them, whether the union of the three be by perfect osseous intermixture, or partially by fibrous tissue, the limb straight and strong from being stiff, will safely encounter the fatigues of travel, not more, but now less, subject to disease than the opposite limb. In the case just recorded, the bony union is complete, proving that such is practicable; it is comfortable to the patient and useful. It needs no prophet to foretell, that as sure as it is the rule of practice to ensure mobility in the elbow after excision of that joint, so sure will the rule be to secure immobility after excision of the knee-joint.—*Monthly Journal of Medical Science, April*, 1854, *p.* 329.

93.—*Case of Incision into the Knee-joint.* By Robt. B. Jordison, Esq., South Ockendon.—[The following case shows the extent to which injury of this large joint may be carried, with ultimate safety, and even without anchylosis.]—George G., aged 20 years, an agricultural labourer, of strumous habit, whilst in the act of mowing, came in contact with the scythe of his fellow-labourer. Immediately after the accident, he was conveyed in a cart to my surgery, when, on examination, I found an incised wound of about five inches in length, extending transversely across the anterior part of the thigh immediately above the superior edge of the patella. The hemorrhage, which had been considerable, had in a great measure subsided. On introducing my finger into the wound to ascertain its course, I could readily pass it into the cavity of the joint, the aperture into which was to the extent of about an inch. I lost no time in closing the wound, which I did by a number of sutures, covering the entire wound with numerous strips of adhesive plaster, and encasing the whole in oil-skin, so as to exclude the air as much as possible. I then placed the leg and thigh upon a long, straight splint, and had him conveyed home. In the course of two hours reaction commenced, and for about six hours he suffered excruciating pain, which I successfully combated with large doses of opium, combined with small doses of calomel. I allowed the dressings to remain undisturbed for several days, and for a fortnight there was not the least constitutional disturbance, but at the expiration of that time (he being still under the most rigid antiphlogistic discipline), the pulse suddenly rose to 135, the tongue became loaded, and the countenance anxious; the knee was very much enlarged, exquisitely tender, and discharged large quantities of synovia. I ordered two dozen leeches to be applied, hot fomentations, and to take calomel and opium every four hours. In the course of a few days the constitutional disturbance gradually subsided, but the size of the knee remained unaltered; the integuments now sloughed to a considerable extent, and the discharge of synovia still continued very profuse. In about ten days more he was attacked with a violent rigor in the night, and the whole train of inflammatory symptoms returned with renewed force, but in the course of five days they gave way, but only again to be renewed at the lapse of a week, and thus the case progressed for upwards of two months, when the wound commenced for the first time to wear a more healthy aspect, and the tenderness to subside, and in fifteen weeks from the infliction of the injury it was cicatrized. The motion of the joint was at first very limited, but as time wore on it obtained greater mobility, and I have now the satisfaction of seeing him industriously employed in his wonted avocation, with his once afflicted knee as strong, as flexible, and of as much service to him as it was prior to the accident.—*Lancet, April* 8, 1854, *p.* 385.

94.—*Case of Inflamed Bursa of the Patella; Evacuation of the Fluid.* Under Mr. WEEDEN COOKE, at the Royal Free Hospital.—Mary S., aged 30 years, a servant-of-all-work, presented herself amongst the out-patients, March 10th, 1853, with effusion in the bursæ of both knees; the distension was considerable and painful, and distressed the patient very much, wholly incapacitating her for her usual avocation. She was in good general health, but rather plethoric. Mr. Cooke having introduced the grooved needle, at the same time rotating it, and pressing gently upon the swelling, an ounce and a half of unctuous, synovial-like fluid was obtained from one bursa, by which procedure it was totally emptied. A bandage was applied very lightly, and she expressed herself as being much relieved by the tapping. A blister was ordered to be applied the same evening to the knee, and the patient desired to take a purgative.

A week afterwards, the blister being healed, there remained some thickening of the walls of the bursa, as well as some puffiness of the surrounding tissues.

The next week, being the second after the tapping and blister, the knee was in quite a normal condition, with not the slightest appearance of there having been any thing the matter with it.

The other dropsical bursæ was then subjected to the same treatment, and progressed equally well. At the end of a month the patient returned to her occupation, with a caution always to use a pad when kneeling.

Mr. Cooke said, on discharging this woman, that these cases are constantly presenting themselves, and always yield to this treatment, if the patients be in tolerable health, as readily as the foregoing; if a strumous or otherwise unhealthy tendency exist, a second tapping and blistering are occasionally required, with the addition of the application of iodine ointment to the blistered surface, and of course, if necessary, constitutional treatment.

[Mr. Cock had a little patient at Guy's Hospital with a similar inflammation, and he evacuated the fluid by making a puncture into the joint. The symptoms after the operation subsided to a surprising degree.]—*Lancet, Dec.* 17, 1853, *p.* 576.

95.—ON AMPUTATION AT THE ANKLE-JOINT.

By SAMUEL HADWEN, Esq., Surgeon of the Lincoln Hospital.

[Mr. Hadwen has given us several good cases of this description, treated after the method of Mr. Syme, in which he differs in some respects from others who have performed this operation. Of course the removal of the diseased bones and articular surfaces is the one great point to be attended to. The diseased action in the soft parts is generally altered when this is done.]

The thumb and index finger of one hand resting respectively upon each malleolus, the first incision was made by introducing a stout scalpel through the soft parts, down to the bone of the part indicated by the thumb, and carrying it directly across in the course of the flexure of the joint to the other, or that occupied by the finger; the direction of the knife was then altered, and made to pass from the centre of the last point, the malleolus, through the sole, with a little inclination backwards, up to the centre of the opposite malleolus; terminating, in fact, at the point of commencement. In this manner the external incision was effected by one nearly continuous sweep of the knife. The most admirable feature in this operation is the conversion of the sole of the heel into a flap to become the future covering of the bony stump. Thus a part, naturally endowed with properties purposely designed to bear the superimposed weight of the body and to resist compression, is again made to fulfil, after the removal of the disease, its appropriate purpose in the economy. It is consequently, of some importance in dissecting back the flap, to keep the nail of the thumb and the knife directly in the rear, close up against the bone of the heel, so as to preserve not only the skin, but the whole of the fibrous and fatty granular structure of the sole, thereby securing the whole of this beautiful and elastic cushion of support. Not only will this point be secured, but that which at the best is a tedious bit of dissection, will be much facilitated; and, what is more, incisions through the skin, or "button-holes," as they are called, avoided. There is no difficulty in this dissection which ordinary care and a steady hand does not readily surmount. The difficulty has been exaggerated. When the surgeon is about to perform this opera-

tion for the first time upon the living subject, he will do well, if he have the opportunity, to practise it previously upon the dead. An excuse has been made for the "button-holes." They are pardonable only because of very little consequence; and, as neatness in an operation is a point always to be admired, it behoves the surgeon to avoid these perforations. "What is worth doing at all, is worth doing well;" and though at the time the patient may be insensible, when chloroform or ether is used, to the pain of these punctures, I am not so sure that the process of healing, even of these small incisions, is accomplished without uneasiness. That these openings through the skin may be useful for the escape of matter (an alleged but questionable result), is no reason or excuse for a slip or unintended stroke of the knife. If the surgeon would make it a rule throughout this operation to keep his knife close to the bone, he need be under no fear of button-holes. Another, and that a very disastrous circumstance, he will also, by this rule, escape. In dividing the parts behind the internal malleolus, it is of the first importance that he keep his knife free from the posterior tibial artery; and this will best be done by cutting quite behind the flexor-tendons, close to, or even shaving the periosteum. From want of attention to this point, I have seen this vessel completely divided, the operation frustrated, and obliged to be superseded by amputation above the joint, thereby depriving the patient of the benefit of the plantar cushion for a flap; and, disadvantageously, still more curtailing the limb. When the flap has been reflected back, and the great tendon of the heel and the lateral ligaments divided, the disarticulation may be accomplished with ease. From want of attention to this latter circumstance,—the division of the ligaments,—I have seen the disarticulation rendered very embarrassing. The thinner the slice of bone removed by the saw the better. In two or three instances it barely cleared the depth of the pit in the tibia. Chloroform was successfully used in all the cases except the third, in which the patient requested, in consequence of the very disagreeable after effects experienced on two former occasions of its use, that it might be dispensed with. He afterwards assured me the pain of the amputation had been more endurable than the distress, depression, and illness previously experienced from the chloroform.

In one instance I deviated from the course above described, by disarticulating the astragalus before dissecting the flap from the heel, desiring to see whether I could thereby facilitate this object. It forms the only occasion when a button-hole was made by me in these operations, and rather impeded the performance than otherwise. The hole was of no use. It soon healed; and some matter which afterwards formed required a fresh opening to be made.

As in operative surgery, conservatism, as far as admissible, should be the surgeon's rule, so, in medicative, should simplicity be his guide. In the following cases, after the arteries had been tied, the wound washed, and any diseased structures connected with the parts removed, the flap was adjusted, and retained in position by as many sutures (inserted about an inch apart) as were required. The two first were then dressed in the ordinary way with adhesive straps and bandage; the remainder in the following manner: Strips of linen, about a foot long and an inch wide, soaked in warm water, were applied to the stump, between the sutures, and extended on each side of the leg three or four inches upwards; a broader and somewhat longer piece was then made to surround the lower part of the leg, so as to secure the ends of the pieces overlapping the flap. A single loose piece of lint or linen cloth, always kept moist with warm water, covered that part of the extremity not in contact with the bed; and a concave sponge, also soaked in warm water, and the latter squeezed out, received the end of the stump. This was made to keep up a gentle pressure by means of a pillow placed behind, and also to preserve the temperature, which was still further insured, and evaporation prevented by a piece of oil-skin laid over all. The patient having obtained an easy position, reclining upon the side of the amputated limb, was enjoined to keep the extremity as much as possible immovable.

I have been thus particular in describing this mode of dressing, because it is far superior, in my opinion, to the old practice of adhesive straps and bandages: keeping up a better regulated pressure; revealing at a glance the state of the stump; allowing discharge an easy escape; lessening mischievous stretching and laceration of tender adhesions when removed and replaced; diminishing pain to the patient and trouble to the dresser by the facility of removal; and requiring from its greater cleanliness, less frequent renewal. I have now for several years past practised this

kind of dressing, with or without the sponge, in all my cases of amputation. The unsuccessful result in the second case caused me to abandon the old plan, and the above-named advantages have confirmed me in the use of this more simple method. A few weeks ago, a double flap amputation of the thigh was healed after only six renewals of this kind of dressing. The sutures, or at least the greater part of them, were removed on the fifth or sixth day; and, in all cases save the second, rapid union by the first intention (as it is called) of the greater part of the flap ensued.

In four of the five cases admirable stumps were obtained. The first individual, Checkley, recovered with a perfect stump, but was attacked some months after leaving the hospital, with spitting of blood, and eventually died consumptive. The stump continued sound to the last. In the second case, the whole of the flap sloughed away. Whether this was owing to any injury of the posterior tibial artery, unobserved during the operation (not very likely), or whether owing to the diseased state of the integuments, or the low state of the vital powers (the man was greatly reduced, and the skin in a very diseased condition), or to an over pressure from the applications, or to a combination of any of these, I am unable to say. More pressure, by means of the strapping and bandages, was applied than I have ever since deemed it necessary to use; and though I cannot assert that this was the cause, the suspicion that it may have been is strengthened by what I have heard of other cases in which a portion or the whole of the flap mortified. Reasoning *à priori*, firm pressure would appear to be indispensable for the purpose of keeping the loose, hollow flap in contact with the large cancellous surface of the ends of the bones. It is, I am satisfied, a fallacy to suppose a greater degree of pressure is required either in this or other kinds of amputation, than that which may be obtained by the simple method advocated above. Hobson, the subject of the third case, has for nearly four years been able to walk with an artificial substitute, almost as well as he did before the disease of the foot existed. He pursues his employment regularly, and stands for many hours in succession, and gets through his work as well as though he had not lost his foot. Notwithstanding that he has twice had the misfortune to break the thigh-bone on the same side as that on which the amputation was performed, once before and once since the event, and has thereby still further shortened the limb, he walks without a stick, and with a hardly perceptible limp. Hallam and Porter have equally excellent stumps. With an artificial aid, similar to that used by Hobson, they both walk well.—*Med. Times and Gazette, Dec.* 24, 1853, *p.* 650.

96.—*Modification of Syme's Operation at the Ankle-joint; Non-Excision of the Astragalus.* By John Simon, Esq., at Saint Thomas's Hospital.—It is an advantage to leave the astragalus in the amputation of the ankle-joint, supposing that bone to be unaffected by caries. It is alleged, on the one side, that it is of importance to preserve articular movements in the lower part of the leg, so as to increase the usefulness of the shoe, and allow of a kind of natural flexion and extension; whilst others contend that much of the steadiness and firmness afforded by the long lever of the tibia and fibula are lost by preserving the tibio-astragaloid articulation. We do not pretend to strike the scale; but it seems in some degree a pity to take away a perfectly healthy bone, and it may perhaps be maintained (though surgical machinists would be most competent to decide the question) that some degree of movement between the tibia and the shoe might be of advantage. However this may be, we are bound to say that Mr. Simon has had a case of the kind in private practice, where his modification of Syme's operation at the ankle answered admirably. We find that this first astragalar amputation was performed as far back as May, 1848; and we are inclined to think that this case, with the one that was admitted into St. Thomas's Hospital, are the only instances in which the operation has been performed in this country. The patient was about fifteen years of age, and suffered from scrofulous caries and necrosis, affecting the front and outside of the tarsus, extending even to the os calcis, but sparing the astragalus. It of course required care to verify this. The boy's health was breaking down, and it was judged necessary to remove the source of irritation: but as Mr. Simon had ascertained that the astragalus was not diseased, he resolved to leave that bone. The

operation was performed in the same way as is generally adopted for amputation at the ankle-joint, the knife running between the astragalus and os calcis, instead of being worked between the astragalus and the lower extremity of the tibia and fibula. The flap was taken in the same manner as in the ordinary amputation of the ankle-joint, and the stump turned out remarkably good and useful. Mr. Simon considers that it was better than the stump left after Chopart's operation, because it was being undisturbed by muscular contraction; and better than Syme's because of its great breadth, its mobility in the joint, and the saved inch and a half of leg. This stump has been seen for several years, and it was found that it had worked very advantageously for the patient. The hospital case in which this same operation was resorted to refers to a railway labourer, about twenty-five years of age, who was admitted into the hospital in the summer of 1853, for injury to the foot. A carriage-wheel had passed obliquely over it from behind forwards and inwards, crushing everything in front of the line of incision, and also breaking and exposing the under part of the os calcis. The same amputation as in the preceding case was here performed, but the poor man died of tetanus. When he was seized of this fearful affection, the entire stump had very nearly healed; and in prospect of firmness, position of cicatrix, &c., &c., was as near a model stump as one could have wished to see. It was indeed extremely painful to notice, about a fortnight after the operation, that tetanus was approaching. Mr. Simon succeeded, however, in staying the symptoms for three days by the use of nicotine; but it then recommenced, as it were, with tremendous violence, and killed the patient in forty-eight hours.—*Lancet, Jan.* 28, 1854, *p.* 100.

97.—ON DISEASE OF THE ANKLE AND TARSAL JOINTS.

By Samuel Solly, Esq., F.R.S, Surgeon to St. Thomas's.]

[Mr. Solly proposes to review several cases of disease of the ankle and tarsal joints in detail. He says:]

Not many years ago disease of the ankle-joint, or scrofulous disease of the tarsal bones, almost invariably led to amputation of the leg below the knee; but now we are able, in many cases formerly considered hopeless, to save the foot; and this is accomplished by the removal of carious bone by means of the gouge, acting on the same principle that guides the dental surgeon in the treatment of carious teeth; and I feel convinced that if the scalpel and gouge were more frequently in the hands of the surgeon he would be less frequently called upon to employ the amputating knife and the saw.

I will read to you some brief notes of what I dare say some of you have called my pet case, from the interest with which you must have perceived that I have watched it, and the pleasure I have evinced in pointing it out as we visited the wards. Certainly one of the greatest boons that the discovery of chloroform has conferred on surgery is the impunity with which we are able to operate in these cases. All these painful operations must be more or less experimental, for as we cannot be certain of their perfect success, we should not have ventured so far into this hallowed path of conservative surgery without the support of chloroform. There is one great difficulty attending the treatment of these cases in private practice, which does not occur in our public hospitals—I mean the want of patience on the part of the patients and their friends. These cases are always tedious, lasting a long while, and frequently making but little perceptible progress from day to day, or even from week to week. The patient to whom I have already referred has been in the hospital two years and a half, and all his wounds are only just healed. But I will give you an outline of his case.

James S., aged 15, was admitted into George's ward, under my care, on the 16th March, 1852. He was a scrofulous-looking boy, flabby, but not emaciated; the glands of the neck were swollen, and at some points had ulcerated; there was also a chain of small ulcers under the chin, extending nearly from one year to another. Both feet were swollen; in constant and severe pain; there were several sinuses, with unhealthy, sluggish, purple edges, surrounding the ankle-joints of both feet. At the bottom of these sinuses carious bone could be felt.

The left foot became painful and swelled about two years previous to his admis-

sion, and the right foot soon suffered in the same way. He attributed the attack to cold and damp. He was soon unable to walk from pain in the ankle-joint and across the instep, nor could he bear any pressure over the joint. He says that he then observed large, red lumps form over both ankles on the left foot and on the outer side of the right one. These abscesses were poulticed for a short time, and then they burst. They have never healed in the slightest degree from this time.

He states that he was under the care of a gentleman at Stroud, who did not probe the wounds: but that above five months previous to admission another surgeon from Fort Pitt, who carefully examined the ankles, stated that there was diseased bone, and that in all probability he would have to lose both his feet.

My first object on his admission was to improve his general health before submitting him to any operation; and having accomplished this by means of cod-liver oil and a generous diet, I had him first in the operating-theatre on the 16th of June, 1852. On this occasion, I cut down over the external malleolus of the left foot, and removed the whole of the external malleolus, a portion of the astragalus, and the articulating surface at the end of the tibia, laying open freely the ankle-joint. The chasm which was thus made was certainly a frightful one, and I confess that I trembled for the after consequences; but as the operation was performed under chloroform, there was no suffering. He had an opiate at night, and slept pretty well. I found him the next day more free from pain than previous to the operation; indeed, I have generally remarked that this is the case after the removal of carious bone, however severe the operation may have appeared at the time. The wound soon assumed a healthy appearance, suppurating freely, and throwing up florid and vigorous granulations.

On the 2nd of July, I performed nearly the same operation on the right foot, with equal success; and on the 2nd of October, finding that there was still some carious bone in the left foot, I again operated, on this occasion removing a large portion of the os calcis; and early in April of this year, I was again obliged to operate on the right foot, removing some carious bone from the os calcis.

The wounds and sinuses were all healed about the commencement of last August —that is, just thirteen months and a half from the performance of the first operation; and now, early in October, he can walk well with the assistance of a stick; the feet are both quite sound, and for a scrofulous subject he is really a healthy-looking-boy.

These casts will show those of you who did not witness the operations the extent of the incisions, and give you some idea of the chasms which have been filled up.

Now you must not suppose that you will be equally successful in all such cases, and you must watch them with great care, seeing that the health of your patient does not suffer from the operation or the discharge which follows. You must be prepared to have recourse to amputation, if you think your patient requires such mutilation to save his life. You must watch the condition of the tongue, and let it guide you in the administration of tonics. If you find it getting brown or dry, abstain from quinine and its compeers, and give the effervescing mixtures, taking care at the same time to keep the bowels open. If there is much thirst, with fever and depression, you will find brandy with soda-water useful, adding the carbonate of ammonia to the effervescing mixture. If there is restlessness at night, give morphia, with an aperient in the morning; also calomel, if the liver is sluggish.

The next case that I have to relate occurred in my private practice, and I think it affords equal encouragement to follow this line of conservative surgery. The subject of it was a young lady, aged 14, who sprained her foot at a boarding-school when dancing. She was rather strumous, though her parents were both remarkably strong and healthy. She states, when she first sprained her foot she paid no attention to it, though after a little while she suffered excruciating pain at night. I saw her first about two months after the receipt of the injury. She was then pale and thin, with a quick, irritable, feeble pulse, extremely nervous and anxious. The right foot was swollen across the instep to at least double the size of the other foot; there were two open abscesses, with nasty, unhealthy, purple edges over the chain of cuneiform bones, which could be felt distinctly with the probe to be in a state of caries.

On the 11th of May, 1852, assisted by my friends, Mr. Martin, of Reigate, and Mr.

Chaldecott, of Dorking, the chlorform having been administered by Mr. Carpenter, I made an incision on the inside of the foot, about two inches in length, directly through the abscesses down to the bone. I found the cuneiforme medium detached, floating in pus. I gouged away the greater part of the cuneiforme internum and portion of the cuneiforme externum.

On the day following the operation she expressed herself much relieved, almost free from pain which she had suffered up to that time. On the 12th of June I removed some more carious bone, principally from the metatarsal bone of the great toe. She took the cod-liver oil and a very nourishing diet, &c.; occasionally hyosciamus at night.

In the following September she left the neighbourhood of London, and went down into Devonshire, to be under the care of Mr. James, of Exeter, and Mr. Pycroft, of Kenton, from whose notes I make the following extracts:

"Very soon after her arrival in Devonshire she began to mend, the discharge from the abscesses lessened, and the external sores healed to a considerable extent, whilst her general health and strength rapidly improved. About six months since, a fresh abscess broke on the outside of the foot, near the cuboid bone, and the probe passed through it grated upon the bone. She suffered severe pain for several days previous to this, but since she has had neither pain nor tenderness, and the foot will bear handling roughly. These three abscesses are still open, but on probing them to-day I did not touch the bone. The discharge from them is a good healthy yellow pus, and slight in quantity; the sores look well, and are less in size; the foot is an inch less in circumference. She has rapidly gained flesh, is as stout and well looking as most girls of her age; she has excellent spirits and appetite; can walk on her crutches three miles over very hilly country; suffers no pain whatever; in fact, she tells me she forgets her foot. She is, and has been for two months past, able to bear her weight on the diseased foot, though I do not allow her to do so."

From this account I feel confident of her ultimate recovery.

This curious disease of the tarsal bones is often induced by what is called a sprain. A simple *sprain*, pathologically speaking, is a stretching of a ligament to the extent of laceration of some of its fibres. In a scrofulous subject the bones are morbidly soft, so that the osseous tissue is torn, as well as the ligamentous, and this laceration is the primary cause of the caries. In considering the anatomy of the ligaments of the foot in relation to these injuries, let me remind you of the joints between the astragalus and os calcis, and the strong interosseous ligament which fills up the hollow between the two joints, by which the bones are united. The articulating surfaces are almost flat; the joints are not strengthened by any projecting lips, like the two strong malleoli at the ankle-joint. In all the balancing motions of the body the strain upon this ligament must be enormous. Its very bulk and strength demonstrates how much is required of it. When you dissect these ligaments of the foot mind you have a good look at it, so that you will remember it when you are in practice. You often find the attachments of this ligament the seat of disease, and as the pus which is secreted from the carious bone finds its way most readily upwards towards the ankle-joint, this disease has often been mistaken for disease of the ankle-joint, and an erroneous operation performed. You will therefore see the importance of a correct diagnosis as regards the course of your operation; but it is also important in reference to your prognosis, for you will see that if the ankle-joint is sound your patient, in the event of his recovering with an anchylosed calcano-astragaloid joint, will still retain the motions of the ankle-joint.

The next cases to be related illustrate these observations.

The first is one in which some years ago I performed the operation of amputation, believing, and in this belief my colleagues concurred, that it was necessary to save life. I do not hesitate to say that with my present experience of what may be done by the gouge and scalpel, the limb might have been preserved. It was the examination of this foot that led me to perform the operations of which I shall give some further examples in this day's lecture.

William B., aged 9, a sickly-looking boy, and of strumous diathesis, about eighteen months previous to my being consulted, stepped off the kerb-stone, and twisted his ankle. On reaching home he felt some pain in the joint, and the foot swelled the same evening; but still the discomfort was so slight that he did not have any advice for three months. He was then placed under the care of a surgeon for three

months more; after that he was admitted into Guy's Hospital, in which institution he remained nine months. During his sojourn there an abscess formed, and was opened, and he was removed by his mother, because, as she said, the surgeons told her he must have his leg off. The poor little fellow now came under my care, and I admitted him into this hospital. For eleven months I combated the local disease by the usual remedies, and did all I could to recover his constitutional debility, but to no purpose; and as he was evidently sinking I amputated his limb, and he soon recovered from the operation, and in a short time left the hospital quite well.

Examination of the Foot.—Two fistulous openings on each side of the tendo-Achillis; ankle-joint sound; softening, ulceration, and disintegration of the interosseous ligament between the astragalus and os calcis; caries of the upper part of the os calcis in the situation of the posterior astragalo-calcaniod articulation; caries and absorption of the corresponding portion of the astragalus embedded in the os calcis; anterior and a little to the outer side of this—that is, just at the point of the inferior attachment of the interosseous ligament—there is a small osseous sequestrum, about the size of a filbert.

Now, all this mischief was evidently the result of the sprain, and I concluded that the sequestrum just described was more or less detached by the forcible torsion of the interosseous ligament. In scrofulous subjects the bone is softer and more yielding than the ligamentous tissue. This form of injury is, I believe, more common than is usually suspected, and I fear that many a foot has been amputated for disease of the ankle-joint when that joint has been sound, and the disease has really existed in the calcano-astragaloid joint.

Mary Ann M., aged 32 (but looks much older), married, was admitted into Queen's ward, under Mr. Solly, April 12, 1853. She has never been very strong, but has never suffered from serious illness of any kind. About six months ago, she began to suffer very severe pain in the right ankle; this she attributed to a sprain which she had received three weeks ago, although she had been suffering no inconvenience in the interval. The outer side of the foot, about and below the ankle, began to swell soon after the pain commenced, and also became red upon the surface. The redness and pain extended some distance up the leg at first, but this soon went away by fomentation. About a month after she first began to suffer pain (the swelling and redness having continued as at first), a small abscess formed below the outer malleolus, which soon broke and discharged a very small quantity of pus; the opening which was thus effected has continued up to the present time, and has been followed by two or three others in the immediate vicinity. Lately too she has had some similar openings on the inner side of the foot; none of them discharge much pus. Her general health has suffered much during her illness; she looks pale and anemic, and feels low; besides this, however, she appears older than her age would lead us to suppose. The ankle as a whole is very much swollen, but the principal part of this is below the end of the fibula, and on the outer side of the os calcis; in fact, the malleoli can both be felt plainly, although there is slight swelling on each side. No fluctuation can be felt in the intervals of the ligament of the joint, nor has she any pain on pressure here. She cannot walk on account of the jar which is communicated to the whole foot. The swelling on the outer part of the os calcis is soft, quaggy, and not particularly circumscribed; upon its surface are several ulcerated openings. A probe passes some depth in two of these, and at the bottom soft and carious bone is felt, which seems to belong partly to the astragalus, but principally to the os calcis. She has not noticed any scales of bone come away with the poultices which had been applied previous to her admission. One of the openings on the inner part of the foot leads to a sinus of about an inch long, which runs backwards horizontally and superficially, but does not go towards bone; one or two of the others go more inwards towards the joint, but not near bone. Cod-liver oil, one drachm, twice a day; porter, slice of meat.

April 23. A long semilunar incision was made from near the insertion of the tendo-Achillis to about the middle of the fifth metatarsal bone. Upon cutting deeper a considerable part of the os calcis was found soft and carious, and about one-third of its body, with a small portion of astragalus, was removed by the gouge; there was not much hemorrhage. The patient had chloroform. The extremities of the wound were afterwards brought together by plaster, but the middle left open.

May 1. She has considerably less pain since the operation than she had before it,

and free discharge. The outside of the foot too is less swollen. The opening on the inner side remains the same as before. Cannot move the foot, however, without pain. She sleeps well, and considers herself better in health since the operation.

Aug. 30. During the period since the last report the openings on the outer side have gradually continued to fill up, and are now quite healed. Her health has considerably improved, and she has even some colour in her cheeks, and says that she is altogether in better condition. Although the openings are healed there is still some puffy swelling, and she has pain when she puts her foot to the ground. A free incision was made on the inner side of the ankle, below the inner malleolus, through a strumous abscess, but no bone removed. The incision healed up afterwards readily, and the sinuses with it.

Was presented Sept. 26. This patient was anxious to return to her family in the country; I therefore consented, though I stated it would have been better for her to have remained a little longer. Could not bear any weight on the foot, but has no open sores now. Has still some puffiness on the outside, but no tenderness on pressure. Health very good; in fact, better than it had been for some time.

The details of the above cases point very forcibly to the serious consequences occasionally resulting from sprains. Details of such cases in their early stages might be accumulated without number. Prevention is better than cure. Always remember that it is the duty of an honest surgeon to keep his patients out of surgery, just as it is the duty of a honest lawyer to keep his clients out of law. A sprain, especially in a strumous subject, is a very serious matter; and it is for this reason that the Almighty Creator has endowed the ligaments with such exquisite sensibility. The excruciating pain which follows the undue tension of a ligament, teaches the non-professional man to take care of them in his own person, and still more ought it to teach the surgeon to protect and guard them after they have suffered injury. It is for this reason that I recommend, in the first instance, entire rest in all sprains while there is any inflammation; after a few days, I treat it as a fracture, and fix the foot completely either with the gum-bandage, which is on the whole the best, or by means of stiff buff-leather splints. These splints are softened with warm water, and then moulded to the foot. Gutta percha may also be used if you cannot procure leather thick enough, but I do not like the gutta percha as well as the leather.

A few days ago I was obliged to remove some carious bone from the os calcis and astragalus of a young gentleman, aged 17, who sprained his foot in April, 1852. He was walking quickly out of the garden gate, and catching his foot against a stone, gave it a sudden twist. He says that the pain was very severe; still he did not return to the house, but came up to London. He first consulted me last year, August, 1852. I found evidence of inflammation in the calcano-astragaloid ligaments and joints. I blistered the foot, and giving alterative medicines, confined him to the house for about two months. I then put on a plaster and leather splint, and allowed him to pursue his studies at King's College; but, unfortunately, this liberty proved too much for him, and inflammation again set in, followed by suppuration, great debility, and emaciation. A gutta percha splint, a wooden leg with a rest to it, cod-liver oil, and four months at the sea-side, restored his health so completely that I was able to lay open, without fear, two long sinuses, and gouge out some carious bone. The operation was performed under chloroform, and he tells me that he has been in much less pain than previous to the operation. He has returned again to the sea-side, and in a few months I hope to find all sound.

Harry G., aged five years, admitted into Queen's ward, under the care of Mr. Solly, July 19th, 1853. The child did not come under my notice until the commencement of my dressership on the 2nd of August. I then found him presenting the appearance of possessing the strumous diathesis in an eminent degree. He has light hair and eyes, and a peculiarly delicate, transparent skin; but there is no enlargement of the glands, nor other distinctive marks of scrofulous disease. The integuments of the right foot below the ankle are rather congested; the foot is swollen from a considerable quantity of inflammatory deposit in the neighbourhood of the heel, destroying the contour of this part of the foot. A small fistulous opening exists just over the outer malleolus, from which a slight fungous growth proceeds, and a purulent discharge exudes. A probe introduced into this papilla readily passes down to the os calcis, which is felt to be in a carious condition. The child seems

in tolerable health for so delicate a subject; his appetite is good, and he sleeps well.

The only history which can be learnt concerning his disease is, that for the past three months he has complained of his right foot, which became tender and swollen, and it was soon ascertained that he was unable to walk about as usual, the disinclination to place the foot to the ground increasing daily. A small abscess formed just below the outer malleolus; the skin gave way after a little time, and a little pus was discharged. A fistulous opening remained, through which a small quantity of pus has continued to discharge up to this date.

August 20. Mr. Solly desired the child to be conveyed into the operating-theatre, and to be placed under the influence of chloroform. This having been done, he made a longitudinal incision of about two inches and a half in extent over the situation of the os calcis, and below the papilla alluded to. This incision extended down to the bone, and with the gouge Mr. Solly removed the whole of the caries, which involved the entire posterior half of the calcaneum. A piece of lint was introduced into the wound, and the child was removed to bed, and a warm poultice applied.

22. The foot is considerably swollen, and the wound is discharging freely. The child continued in good health, having suffered no ill effects from the inhalation of the chloroform.

27. Going on well. The wound is commencing to granulate from the bottom.

31. Progressing favourably; the granulation of the wound is proceeding; a free purulent discharge exudes.

Sept. 26. The granulations of the wound are on a level with the surrounding skin, and cicatrization has commenced, but there is still a slight discharge of pus.

Oct. 10. About the same. The wound is closing. The papilla is in the same state as before the operation, still discharging a little pus. The foot presents a better appearance, but there is still a good deal of inflammatory deposit in the neighbourhood of the diseased spot. The child's health continues very good.

Nov. 2. Improving daily.

You must not imagine that these cases are always successful. The following was lately under my care at George's ward, and the constitutional irritation produced by my first operation was such that I was afraid I should lose my patient. I was therefore obliged to amputate. You will perceive by the details that he was beyond the middle period of life, and there is no question that what the system will bear at twenty it would resent at fifty. You must therefore, in considering the propriety of operating, bear in mind the age of your patient, and after you have performed the operation watch your patient most carefully. This man was of an anxious temperament, and he had been cast down a good deal by long-continued disease.

T. H., shopman, aged 52, admitted into George's ward on the 26th of May, 1852; disease of ankle-joint; is married, and has a large family. He is of quite temperate habits, and his health has been uniformly good, until September last, when he was laid aside for about ten days on account of fever and general indisposition. He returned to work, but for some time was unfit for full occupation. Towards the latter end of October he experienced pain in the instep and ankles, with swelling of the part; the pain felt as though the bone was being bored with some instrument; it persisted through November and December, when he became a patient of Mr. Solly. The ankle was strapped at different times, but he did not rest the limb, and being more than usually engaged at this time—Christmas—the pain became much aggravated, and he was obliged to desist from work. In January an abscess made its appearance, and was opened; and for six weeks the limb was kept at rest on a gutta percha splint. Subsequently two more abscesses were opened. When admitted there were openings both on the inner and outer side of the joint, the inner one extending to the front of the joint, where some carious bone could be felt. The joint was considerably swollen, the foot extended, and he complained of a good deal of pain, especially when moved; there was not a very copious discharge from the openings.

On the 18th of June, Mr. Solly made a longitudinal incision in front of the joint, and with the gouge removed some carious bone from the end of the tibia and the astragalus.

July 10. He has not been relieved by the operation, and during the past week he

has complained of loss of appetite and debility; there is free suppuration from the wound, and the least movement of the joint gives him excessive pain. Under these circumstances I was afraid of my patient sinking, and with the concurrence of my colleague, Mr. Green, I amputated the limb to-day at the junction of the middle and lower third, only, therefore, a little above the ankle joint. I gave him this long stump to enable him to have a cork leg. The circular operation was adopted; there was free bleeding, from the difficulty found in tying the post-tibial artery, which has retracted very much. Three vessels were ligatured, the edges brought together by sutures and isinglass. Evening: he has not slept, but is quiet, and there has been but little oozing; pulse 110, soft; stump cool. Ordered, forty minims of tincture of opium immediately; soda water; repeat opium in the evening.

11. Tincture of opium, forty minims at night. He was feeling sick last night, for which the soda water was ordered. To-day he is feeling better; he has had a quiet night, dozing at intervals; not in much pain; skin comfortable; pulse 106, quiet; tongue little white; bowels not open.

12. Ordered, aromatic spirit of ammonia, half a drachm; compound tincture of cardamoms, and tincture of rhubarb, of each two drachms; peppermint-water, two ounces. In the evening, tincture of opium, forty minims; the mixture to be taken occasionally. He was complaining last night of flatulence and abdominal pain, and the bowels not having been opened, he took at midnight a small dose of castor oil, with twenty minims of tincture of opium, and has passed a large quantity of gas, but no motion. He has passed his urine well since yesterday morning. He still suffers much pain in the abdomen, but not tenderness or tympanitis.

13. Ice to the stump; a little hemorrhage; pulse 104, soft; tongue white and a little dry; skin comfortable, and stump free from heat, and looking well. The bowels have been relieved this morning, but, in consequence, the stump was somewhat disturbed, and hemorrhage has occurred to the extent of about an ounce. The stump was elevated, and ice applied for a short time; it is rather tense and swollen, but not to any considerable degree. There is no unusual heat of skin; pulse 96, soft; appetite bad; tongue flabby and coated. He is much more free from pain; passes urine well.

14. Has had a tolerable night without opium; stump looking pretty well; strapping removed, sutures cut, and the edges brought together by a single broad slip, leaving the ankles free; no heat or redness; tongue cleaner; appetite a little better; pulse 96, quiet; feels rather stronger: no return of bleeding.

15. Has slept at intervals; stump looking well; a little discharge from the angles; no redness or heat; bowels not open; tongue large, and coated at the sides; appetite tolerable; no abdominal pain; pulse 88, soft; no thirst.

18. The stump is discharging freely, and there is a little sloughing at either angle. Some large pieces of coagula were removed this morning. He has not had any opiate since the night before last, and his rest last night was much disturbed by flatulence and griping. His bowels have been lately open, and he is now easier; appetite is improving; tongue clean and moist; skin comfortable, and no heat or redness above the limb.

20. The two ligatures came away yesterday. He is doing well in every respect.

30. The angles of the flaps have closed, but the intervening part has been prevented from so doing, by sloughs of coagula and a very free discharge; there has been some tendency to burrowing upwards, there being some spots of redness and tenderness; the edges have been kept together a little by strapping and poultices applied over the end; health remains good; tongue clean.

Aug. 7. In dressing the stump, both yesterday and to-day, a long piece of slough has been removed, looking like intermuscular fascia; there is very free discharge of pus, which has burrowed some distance up the leg, and can be squeezed out; the bandage has been applied more firmly in consequence; the edge of the flaps is looking well, and only about half the extent of the wound remains to heal. He is complaining of loss of appetite and general weakness. Sleeps tolerably.

11. He has been dressed and out of bed the last three days, and is now in better spirits; tongue clean; appetite improved; rather less discharge from the wound. From this date he went on well, and he is now able to walk with an artificial limb so well that a stranger could not discover his loss.

This case demonstrates that after the middle period of life conservative surgery,

has not the same prospect of success as at an earlier period; but I do not adduce the case to discourage your attempting it, but merely to warn you to be ultimately prepared for the more serious operation.

Nevertheless, from all these various cases I think you must agree with me in concluding that conservative surgery is the best surgery, and that we should all strive to promote its progress.—*Lancet, Nov.* 12, 1853, *p.* 453.

98.—CASES OF EXCISION OF THE WRIST-JOINT.

By W. Fergusson, Esq., F.R.S., Surgeon to King's College Hospital

[George G., aged 22, was admitted July 23d, 1851. He received a sprain of the wrist twelve months ago. One surgeon said the bone was displaced; another said there had been no displacement; a third made an incision near the joint and let out a large quantity of matter. His state is thus described:]

The swelling extends two inches above the joint to the centre of the metacarpal bones; there is a large and irregular sore on the palmar surface of the wrist; on the dorsum of the hand a large ulcerated opening at the base of the metacarpal bone of the thumb, and another at the centre of the metacarpal bone of the index finger. The joint is considerably deformed; there is much purulent discharge, and every movement which is imparted to the articulation gives excessive pain.

On admission, the hand was placed on a well-padded splint, presenting a depression at the wrist to allow of a poultice being applied between the splint and the palmar surface of the joint. Mr. Fergusson now proposed excision of all the bones of the articulation which would be found in a diseased state, promising the patient not to remove the hand.

The operation was performed in August 16, 1851, the patient being under the influence of chloroform. Mr. Fergusson began with a longitudinal incision on the ulnar side of the wrist; a parallel incision was made on the radial side, and a transverse one about one inch above the wrist. All the carpal bones were successively removed except the trapezium; the bases of three metacarpal bones being likewise in a carious state, were also taken off, as well as the styloid process of the ulna. No vessels required ligatures. The operation was, from its nature, and Mr. Fergusson's anxiety to keep the extensor tendons from injury, extremely tedious, and the patient a long time recovering from chloroform. The arm was placed on a splint similar to that used before the operation.

The greatest care was taken in the dressing of the wound, but the suppuration proved very profuse, cicatrization did not advance as steadily as could be wished, and several months passed away before any satisfactory progress was made. It seemed as if the part had not sufficient power to assume a healthy action, nor was it at all unlikely that the patient's constitution had a large share in this unfavourable result. It could hardly escape the attention of the observer, when viewing the hands lying on the resting-board, and connected with the lower end of the forearm only by some skin and a few tendons, that it would require an active and healthy circulation in the part to counteract the tendency to purulent transformation, and excite that amount of fibrinous deposit and organization which might have taken the place of the absent carpal bones. Nor should it be forgotten that one principal element of the process of cicatrization is generally absent in these cases—viz., perfect apposition of the supposed healthy osseous surfaces. To effect this, it is plain that pressure should not be applied in the usual circular way, but so contrived as to produce its effects from before backwards, thus bringing the heads or shafts of the metacarpal bones in almost actual contact with the lower ends of the radius and ulna. Nor is it to be feared that the apposition will become too exact, and be followed by osseous anchylosis; some space will, from the very structure of the parts, always be left for the formation of an artificial joint. This patient, after remaining almost nine months in the hospital, was finally discharged on the 26th of April, 1852, that he might reap the benefit of country air. It was expected that he would eventually show himself at the hospital, so as to give Mr. Fergusson an opportunity of ascertaining what progress he had made; for, on leaving the hospital, the various ulcerated openings and wounds made by the knife were not cicatrized, but discharging

much pus. It is very probable that, if any further operation had been required, amputation would have had the preference.

[In another case there was a caries of the wrist-joint, and the carpal bones were excised. This patient was 28 years of age; admitted May 4, 1853. Three years ago a swelling arose near the little finger; an abscess formed, but the mischief gradually extended up to the wrist. Nine months before admission the little finger was amputated and the metacarpal bone removed. A month afterwards he went to St. Bartholomew's, where iodine was applied, and iodide of potassium and cod-liver oil given internally.]

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On May 21, Mr. Fergusson, having ascertained the existence of disease in the wrist, proceeded to operate, and removed most of the carpal bones, and also gouged out a small portion of the extremity of the radius. Mr. Fergusson took advantage of the openings already existing, in order to take hold of the different carpal bones, being at the same time careful not to injure any of the flexors or extensors. The operation was of an extremely laborious character, as it was a matter of some difficulty to seize upon the bones, and remove them without injuring the tendons, and without considerably enlarging the openings. Mr. Fergusson succeeded, however, in taking away the greater portion of the carpal bones. The wrist and lower part of the forearm were wrapt in wet lint, and the patient sent to bed.

Fifth day after the operation.—Wound healing by granulation; to have cod-liver oil. The wound progressed very favourably until June 10, twenty days after the operation, when a rash appeared at the back of the hand, and the wrist swelled again, the discharge being somewhat fœtid. Mr. Fergusson made a small puncture over the wrist-joint, when some ill-smelling pus escaped. The appearance of the part was thereby materially improved. The dressing, with gentle compression, was continued.

Two months after the operation another puncture was made, when only blood was evacuated, and the patient progressed pretty satisfactorily for several weeks, as far as his general health was concerned; but no signs of active cicatrizing effort were noticed in the wrist, which lay on the splint, displaying the different apertures which had been made, and which did not show any disposition to heal. Some motion was retained in the fingers to a very small extent, but enough to show that the flexors and extensors, as well as the extremities of the corresponding muscles, had not sustained any damage.

Mr. Fergusson, fearing that possibly some carious bone had been left, hadthe patient brought into the theatre on October 7, and narcotized with chloroform. Diseased bone in the region of the wrist was removed in the same manner as had been done before, and a portion of the end of the radius taken away at the same time. The treatment was continued as before, but on January 7, eight months after the original excision, some more carious bone was removed; and when we saw the wrist and hand a few days ago, the parts were in a pretty favourable state. Several ulcerated apertures might be observed both on the palmar and dorsal aspect of the hand; these were smaller than they had originally been, and Mr. Fergusson conceives that there is some likelihood of a final cicatrization taking place, leaving to the patient a moderately useful hand.—*Lancet, Jan.* 28, 1854, *p.* 98.

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carious state; it was resolved, therefore, to remove all the diseased bone of the articulation.]

It will here be necessary, before mentioning the mode of operation adopted by Mr. Simon, to remind our readers that Mr. Erichsen removed the bones of the wrist by lateral incisions, and Mr. Fergusson also, by lateral incisions in one case, and by enlarging the orifices of fistulous tracts in another case. Mr. Simon, in contemplating the same excision, thought that the diseased osseous texture might be advantageously taken away by making two long incisions on the anterior and posterior aspects of the joint, reaching from about two inches above the wrist, back and front, to the centre of the palm and dorsum of the hand, the incisions being so managed as to run *between* the tendons coursing down to their destination on the metacarpal bones and fingers. On the 9th of October, Mr. Simon proceeded to operate in the manner just mentioned, and took away all the bones of the wrist except the pisiform and trapezius; one of the metacarpal bones was also excised. The wound made in front was brought together by sutures, but none were applied to the solution of continuity on the dorsum of the hand. Merely two vessels had to be tied. When the suppurative stage had set in, the wounds looked somewhat large; but after a few weeks' careful dressing, contraction began to take place. The patient progressed as favourably as might be expected for the first three months; but the time came, as happens with many excisions of joints, when reparative action ceased, several portions of the wound remaining unclosed, and discharging a rather large quantity of pus, whilst the boy was regaining, under the influence of good diet, cod-liver oil, tonics, &c., a fair amount of health. One year thus passed away, and just when it might be hoped that the final cicatrization of parts was not far distant, the patient was seized with all the symptoms of continued fever, and died about thirteen months after admission. It is to be regretted that no post-mortem examination was made; but it is clear, from the manner in which the patient was attacked, that he sank under an affection independent of the operation above detailed. One circumstance should, however, always be taken into account —viz., the protracted stay of patients in hospital; this is, in most cases, extremely prejudicial to general health, and should always, as far as practicable, be avoided. It is very probable that many cases of partial or complete resection would end more favourably if the patients were as soon as possible removed from the wards, and placed under the most favourable influences as regards general health. In fact, there is but little to do beyond simply dressing the wound after a few weeks are elapsed, and we consider that attention to this suggestion will tend to render the practice of excision of bones and joints more popular, as the results will be obtained in a shorter time than is now the case.—*Lancet, Jan.* 28, 1854, *p.* 100.

100.—*Case of Excision of the Proximal Phalanx of the Thumb.* By T. P. Teale, Esq., F.L.S., Surgeon to the Leeds General Infirmary.—[George Brooke, aged 15, was admitted April 15, 1853, for disease of the thumb. He is tall and thin, but without marks of scrofula. First felt pain in the thumb six months ago. On May 11, an abscess formed on the palmar side of the first phalanx, which was opened and the bone found to be bare.]

Aug. 25. Mr. Teale proposed to remove the diseased phalanx, and to leave the terminal one. For this purpose, he made an incision, rather more extensive than the phalanx, along its radial border. The ligaments and capsule connecting it with the terminal phalanx were next cautiously divided; the shaft of the bone was then separated from the surrounding soft parts; and, lastly, it was detached from the metacarpal bone. The thumb was dressed with wet lint, and the patient confined to bed. The case proceeded well, without any unfavourable occurrence.

Sept. 21. The wound is healed, the end of the thumb is preserved, and the entire thumb has much of its natural aspect, being a little shorter and thicker than its opposite fellow. The thumb has free motion through the medium of the metacarpal bone, and forms an excellent opponent to all the fingers.

Dec. 5. Since the last note, the boy has been regularly at work. There does not appear to have been any attempt at the production of a new bone, as the place of the excised phalanx is occupied by a firm ligamentous structure only. The terminal

phalanx has free motion on the metacarpal bone, and the amount of shortening is exactly five-eighths of an inch.

The disease in this case was caries, and not necrosis; and at the time of the operation what remained of periosteum being adherent, was removed with the bone. The latter circumstance accounts for there having been no reproduction of an osseous shaft. The success of the operation with so unhopeful a form of disease is the more satisfactory. In some cases of diseased metacarpal or phalangeal bones, a genuine necrosis of the shaft takes place, and a thin shell of new bone is formed by the periosteum. The success of an operation is of course much more probable in such a condition than in one of caries. On Wednesday last, Dec. 7, we saw Mr. Simon remove from a man in St. Thomas's Hospital the whole metacarpal bone of the right thumb. The necrosis was quite recent, but the periosteum had entirely separated from the bone; and Mr. Simon stated that he could feel in it, in parts, distinct plates of new deposit.—*Med. Times and Gazette*, *Dec.* 10, 1853, *p.* 603.

101.—*Thickness of the Articular Cartilages at Different Periods of Life in the Human Subject.* By Dr. P. Redfern, Aberdeen.—Of the various phenomena presented to us by a living being, there are perhaps none more interesting, nor more strikingly illustrative of the action of the vital forces upon the tissues, than those of the development of different structures from the same primitive blastema, or from the same blood. What is the precise nature of the process by which a certain amount of material is converted in one position into bone, in another into muscle or nerve, it seems entirely beyond the reach of our present faculties to comprehend. We are, therefore, limited to the determination of the particular modes of development of different tissues, and the general laws which may be deduced from them. In such inquiries, nothing is more likely to lead away from the truth than prejudice in favour of a particular doctrine or system, nor does anything more surely obstruct the progress of science, or more certainly lead to the sacrifice of valuable time, than the existence of conclusions drawn by previous observers or authors from data which were not sufficiently accurate or extensive.

In investigations into the structure of healthy and diseased cartilage, commenced in the year 1848, and continued since that time, I have often been surprised at the statement that the thickness of articular cartilages gradually diminishes as life advances, owing to the conversion of the cartilage into bone; and my object in this contribution to the history of articular cartilage, is to show how far that statement is strictly accordant with facts. I do not hesitate to state that my earliest impressions were, that articular cartilages do not become gradually thinner as life advances, for I had observed them very thick in the aged on many occasions, and spongy and fibrous in old people generally. As such observations increased in number, I at length resolved to test the matter fairly, and with that view I made a large number of measurements of the cartilages of various joints at different ages, at a great sacrifice of time and labour when compared with the importance of the result.

If the thickness of the articular cartilages concerned merely their amount of elasticity, and their adaptation to the uses of the parts of the body to which they belong, it would be of great importance to know precisely what changes take place in them as life advances. We know that the bones and muscles of the aged person are very different from those of the young adult, and it might be expected that the cartilages would also be found changed, or if they should not be so, we should look for some cause for this exemption in the case of tissues made use of for the same general purposes as the bones and muscles, and intended to harmonise with them in their action.

Mr. Toynbee, in his admirable paper "On the Organization and Nutrition of Non-vascular Animal Tissues," read before the Royal Society, and published in the 'Philosophical Transactions,' says:—"The articular cartilage . . . . . is gradually being converted into bone during the whole of life; thus, it is thicker in young than in old subjects, and, as Sir Benjamin Brodie informs me, it is much thinner in old age than in the adult; in fact, it is not very rare to find that the articular cartilage of the head of the os femoris, in many old persons, has completely disappeared—a change which is probably to be attributed to its entire ossification." In a note,

Mr. Toynbee adds:—"This appears to be another of the many instances of the disappearance of the animal, and the increased deposit of the earthy, constituents of the body in old age." And again as one of seven leading facts which Mr. Toynbee believes that his researches tend to establish, he gives the following:—"Articular cartilage, during the whole of life, gradually becomes thinner, by being converted into bone."

[Dr. Redfern has compiled an elaborate table of the measurements he has made. He adds:]

From a conversation with Mr. Toynbee on the statement made in his paper before referred to, I found that his evidence on this matter had been derived from the observations and statements of others, rather than from measurements or observations of his own, and thus I believe that he has been thrown off his guard, and made to appear as the author and supporter of a statement which, under other circumstances, his habitual care and anxiety to arrive at the truth, would effectually have prevented from being made in so definite a manner.

In conclusion, I may state my conviction, founded on the measurements indicated in the table appended, that *articular cartilages do not become gradually thinner as life advances, and that they are not uniformly thinner in aged persons than in early life.* I may also remark that, in endeavouring to estimate the thickness of articular cartilages at different periods of life, I have had presented to me a large amount of evidence in addition to that which I formerly made public, that, as life advances, these structures, and especially those of certain joints, change their elementary characters, and become fibro-cartilaginous, or altogether fibrous. This change has its analogues in the conversion of the costal cartilage into bone, of tendons into fibro-cartilage and bone, and in those changes which age induces in the bones generally, in the cornea and other tissues. It may not improperly be styled *senile degeneration of cartilage.*—*Monthly Journal of Med. Science, Jan.* 1854, *p.* 21.

102.—*On Flap Amputation of the Thigh, Arm, and Forearm, producing very efficient Stumps.* By THOMAS WAKLEY, Esq.—[Two flaps are to be formed, one of the latter being one-third longer than the other, the long one having the narrowest base.]

Mr. Wakley explains his operations mathematically: thus, if the circumference of the limb be twelve inches, the anterior flap should be three inches, and the posterior six inches long, the knife having transfixed the soft parts so as to make the anterior or shorter flap seven inches at its base, and the posterior or longer flap five inches. By this method the measured cut surface of the anterior is exactly the same as the posterior flap; both consequently lie together without strain or puckering, and the divided surface of the bone or bones is not in contact with the cicatrizing soft parts. —*Lancet, Jan.* 14, 1854, *p.* 34.

103.—*On the best Means of producing a good Stump after the Operation of Amputation.*—[The form of the stump should be more or less adapted to the mechanical means to be employed. The following are a few of the rules which should be attended to:]

Respecting the length of stump which it is advisable to leave in amputations of the leg, when the surgeon can make a choice, he should regard the future convenience of his patient by leaving such a stump as will enable him to use with the best effect the artificial limb.

In all cases where practicable, the amputation should be performed at the upper portion of the lower third of the leg. This leaves a stump of sufficient length to give the patient a complete command over the artificial limb, without being so long as to interfere with its mechanical arrangements.

A greater length than this is not desirable, as it is no advantage to the patient, and merely adds to the difficulties in the construction of the substitute, the stump projecting so low in the socket as to interfere with the insertion of the artificial tendo-Achillis, and to render it necessary, in order to attain a requisite degree of strength, to make the ankle-joint of an unnatural thickness. When amputation cannot be

performed at the lower third, any point between it and the commencement of the upper third may be determined upon.

Stumps of the leg may be deemed relatively good in proportion to their length from the lower to the upper third; the greater the length preserved between these points the better, and in no case should the limb be amputated above the locality alluded to. It is to be regretted that several writers of authority have represented the proper point for amputation of this part to be "at a hand's breadth below the patella," no doubt with a view of preserving the knee as an admirable bearing to rest upon, the support being afterwards adapted to it. This may be judicious, when the social position of the patient appears to preclude the possibility of his availing himself of the improved artificial limbs of the present day, being thus compelled to resort to the common pin leg; but in cases where there is a probability of his employing an artificial leg, amputation just below the knee should not be performed; for besides the objection to this proceeding in a surgical point of view, the stump, even should it not become contracted (which is nearly always the case), is from its extreme shortness, and consequent defective leverage, comparatively useless, and frequently entails upon the patient no small degree of suffering from irritation produced by the incessant friction in walking. Therefore, in cases where an entire third of the leg cannot be saved, it is far more to the advantage of the patient to select the *lower third of the thigh* as the point for amputation; this leaves a stump of sufficient length and power, to which the artificial support can be effectively adapted; and it must be borne in mind that a good stump above the knee is far preferable to an indifferent one below.

For all amputations of the thigh, when choice of place is possible, the lower third is very decidedly preferable to any other. The defective leverage, and all the mechanical disadvantages in applying the substitute upon a short stump are here avoided, and the great extent of surface that is inserted into the socket permits, by a nice adaptation, the equal diffusion of pressure on the entire extent, a comfort duly appreciated by the wearer.

In amputations of this limb, and indeed of all others, it may be regarded as a general rule, that the longer the stump the better, of course premising that due allowance be made for the room required by the artificial joint, which does not exceed a space of five inches for the knee. But, as stated before, no advantage is gained by retaining the extreme length of the lower limb, which might in some cases be practicable.

Here, however, an exception should be made in favour of the operation performed by Professor Syme, and also respecting those cases of amputation of portions of the foot in which the ankle-joint is saved. These are certainly the most favourable to the patients, as is evinced by the free and convenient manner in which they are enabled to walk after the adoption of the artificial aids.

The foregoing rule is also applicable to cases of amputations of the arm, as regards the length of stump, with this *essential difference*, that in all cases where it is possible, the *elbow*-joint should be saved, be it ever so short, for it is impossible to construct an artificial joint which shall perform the varied movements constantly required from this important limb.

Amputation of the leg should not be performed upon children, but the lower third of the thigh unhesitatingly selected, for this very important reason, that the amputated limb ceases to grow in uniformity with its fellow, and the patient is doomed to the additional inconvenience of having one knee-joint elevated perhaps some inches above the other, and imparting to his gait a peculiarly grotesque appearance.—*Lancet, Jan.* 14, 1854, *p.* 33.

ORGANS OF CIRCULATION.

104.—CASES OF POPLITEAL ANEURISM.

[In the first case, the patient, aged 32, was admitted under the care of Mr. Prescott Hewett, at St. George's Hospital, Aug. 1st, 1853, with a large popliteal aneurism, occupying the lower part of the right ham, and bulging downwards over the gastrocnemius muscle.]

A weight was for the first time applied to the groin on the 7th of August; but

this could be borne for two hours only, owing to the excessive pain which it caused in the sac and in the leg.

On the 8th, the pressure was resumed, and kept up between three and four hours consecutively in the groin; but he was then obliged to give it up again, on account of the great increase of the pain in the ham and in the ankle; there was little or no pain, however, at the point where compression had been made.

On the 9th, the clamp was applied to the thigh at Hunter's canal, and borne for some time; then the weight was applied to the groin; but, in whatever way the pressure was made, it always gave rise to a great increase of the pain, both in the sac and in all parts below it. On examining the tumour, it was found to be firmer already, for the sac could no longer be emptied. There was less pain about the sac when it was handled, and the œdema of the limb was also much less. The man had now become accustomed to the use of the instruments; and, as he was found to be intelligent, and anxious to carry out the plan of treatment, he was left to regulate the pressure himself.

On the 20th, the tumour was decidedly less in size, and much more solid; there was but little pain remaining either in the sac or in the leg, and there was little or no œdema. The patient slept well, felt quite comfortable, and the opiate draught had been left off for two nights. During the preceding ten days he had managed the apparatus for himself, having a "Carte's compressor" fitted to the thigh, and alternating its use with that of the cylinder-weight applied to the groin. He much preferred the former, having been able to bear it with less pain, and for longer periods. Altogether the pressure had been kept up for about six hours daily, at different intervals, and often for two hours or more during the nights when he has been awake; but he had made a practice of always removing the instrument when going to sleep. The pressure had been applied so as to allow only of a feeble circulation through the sac. There was neither excoriation nor redness about the skin, the instrument having been shifted from place to place along the course of the artery.

On the 26th the sac was firmer, and the pulsation less distinct; two small arteries were detected running over the back part of the sac, in a longitudinal direction. In the previous night, after having had the instrument on for several hours during the day, the patient had been suddenly seized with violent pain in the leg and foot; he was asleep at the time, and had left the instrument off for about three hours. The pain was so great that he was obliged to get up and rub the limb, when, to his surprise, he found that all pulsation had suddenly ceased in the sac; the pain continued for several hours, during which time he could feel no pulsation in the sac; but the latter afterwards gradually made its appearance again, and in the morning it was very evident.

By the middle of September the sac had become so much contracted that it could scarcely be felt when the limb was flexed; the pulsation, although slight, could still be felt over a small space at the lower and outer part of the ham. The collateral vessels at the back of the sac were larger; there was no pain, and the parts could bear handling without any inconvenience. Compression had been kept up steadily for several hours daily, at different intervals, but the instrument had always been taken off during the night.

Being weak and languid, he was, on the 1st of October, ordered a pint of porter daily; and on the 8th, it was observed, that the pulsation still remaining in the sac could be readily controlled by direct pressure in the ham, and that without any pain. Under these circumstances an air-pad was placed in the ham, and the leg and knee were carefully bandaged; the ring-tourniquet was still applied to the femoral. A hard pad was subsequently made use of instead of the air-pad, and the knee was firmly bandaged, so as to check all pulsation in the sac. This plan of treatment was carried on for several days, and on the 18th, when the patient removed the pad for the night, as the tumour was very painful. No pulsation could be detected in the sac, but it re-appeared in a short time; it was very feeble, however, and there was great pain down the leg and in the ankle. The tourniquet and the pad in the ham were re-applied on the following morning, and compression kept up for several hours; and in the afternoon of the 19th all pulsation finally ceased in the sac.

The ring-tourniquet was kept lightly applied on the 20th, but all compression was removed on the 21st. For the last two weeks the patient has been up. The aneu*rismal* sac is now very small, and quite solid. Several large collateral vessels can be

detected running over the back of the sac, and over the inner condyle of the femur. The man is in good health.

[Another case of the same kind, under Mr. LLOYD, at St. Bartholomew's, was cured by compression on the 8th day. This patient, aged 24, was admitted May 4. The aneurism was the size of a pullet's egg, with a forcible pulsation. The common compressing clamp was applied at different parts of the thigh, so as *completely* to arrest the flow of blood through the tumour. The case did not at first proceed rapidly, but the patient was induced to keep the pad applied for twelve successive hours. On the next day the tumour was solid and no pulsation present. The only ill consequences were that a slough formed on the part where the pad had been applied, but the sore soon filled up and healed. In another case of the same kind of aneurism under Mr. LLOYD, the treatment by compression failed, and a ligature was applied to the femoral. The patient was 34, and was admitted July 7, 1853, the aneurism being the size of a large orange.]

On the 8th, compression of the femoral was commenced, two clamps being applied, the one over the brim of the pelvis, and the other in the upper part of the thigh, and the patient directed to alternate the employment of them. The pulsation of the tumour, though easily stopped, could not be arrested by the amount of pressure he was able to bear, but it was considerably diminished. During the following night, the patient had but little sleep, and suffered severe pain; subsequently, however, it became somewhat more tolerable, and by the aid of a morphia pill (gr. ¼) every night, a little rest was obtained. On the second day, the pulse in the tibial vessels had become imperceptible, and, at the end of a week, the beating of the tumour was decidedly diminished. Satisfactory progress appeared to be making up to the 18th inst. (10th day), when the œdema of the limb which had existed, to some extent, throughout almost the whole period of treatment, began to increase considerably. On the following day, the whole limb was so much swollen, that it was deemed absolutely necessary to abandon, for the present, all attempts at compression. At this time, the aneurism, although not pulsating so strongly as at first, was extended in size in all directions; its walls felt much more solid than before, but it was tense, and very tender. The circumference of the knee measured two inches and a half more than the other. During the eleven days that compression had been tried, the man had been, notwithstanding the pain, in fair health, and had taken his food well. His diet had consisted of farina with some broth; no restriction had been placed on his consumption of fluids, but not being very thirsty, he had not drunk more than about a pint and a half per diem. The digitalis draught had been regularly continued, and the bowels had been kept relaxed. On laying aside the pressure, Mr. Lloyd prescribed a saline effervescing draught, three times daily, and ordered cold lead lotion to be constantly applied to the knee.

During the five weeks which intervened between the suspension of the compression treatment and application of the ligature, the temperature of the entire limb remained somewhat augmented, the leg œdematous, and the parts about the knee swollen, tense, and tender. There was much numbness complained of in the foot and toes, often to such a degree that he could not distinguish which of the latter were touched. During the greater part of the time, however, the pulsations in the tumour were so feeble that Mr. Lloyd was led to hope that a spontaneous cure was in progress; on several occasions, indeed, the beating could just be distinguished. Repeated relays of leeches were applied about the joint, and opiates and sedatives were exhibited, under which the patient gradually improved in health.

On August 24, the propriety of the measure having been determined in consultation, Mr. Lloyd applied a ligature to the lower part of the upper third of the femoral artery, in the usual manner. The reasons which induced this alternative were, that notwithstanding the feebleness of the pulsation, the tumour remained for the most part fluid, and was gradually increasing in size, it having so filled the popliteal space, and distended its sides, that there was much fear that the aneurism might either burst externally or become diffused. During the previous three days, indeed, the condition of things had been becoming urgently threatening from the great tumefaction of the entire limb, which involved even a considerable extent of the thigh. The question as to amputating the limb was discussed, but, on the whole, it was determined to give the man the chance afforded by ligature of the femoral trunk. There was at this

time, no evidence of the establishment of a collateral circulation, but the tibial vessels remained pulseless.

Since the application of the ligature, uninterruptedly favourable progress has been made. All pain ceased at once; pulsation has been ever since completely absent, and, even so early as the second day afterwards, the knee measured in circumference an inch and a quarter less than it had done previously. The ligature came away safely on the twelfth day, and the wound has since healed. There remained, for a few weeks, much numbness in the toes, but, coincidently with the decrease in size of the tumour, this symptom, together with the œdema of the leg, has gradually diminished.

[In another case under the care of Mr. Le Gros Clark, the treatment by compression also failed, and a ligature was applied to the femoral. The patient, aged 41, was admitted July 5, 1853. The aneurism completely filled the popliteal space. Compression was made alternately on the middle third and where the vessel crosses over the brim of the pelvis.]

The pressure treatment was continued, altogether for twenty-five days; and although, during the greater part of that time, the force employed was not sufficient to arrest the pulsation of the tumour, yet it caused such severe pain that the man seldom got much sleep, his appetite failed, and towards the end of the time it was evident that his health was materially giving way. No permanent alteration was effected in the condition of the tumour, which at times felt as if more solid, and then again became softer; on the whole, however, it rather increased in size, and the limb below it became considerably more swollen.

On the twenty-sixth day (August 2), Mr. Clark apprehending danger of the sac giving way, as portended by a blush of redness which had appeared on the most prominent part of the tumour, decided on immediate ligature of the artery, which he performed at half-past two in the afternoon, the patient being under the influence of chloroform. In the evening of the same day, the patient was free from pain, the aneurism quite pulseless, and the extremity warm. The first night after the operation was a good one, by far the best the man had had since his admission. On the following day the tumour was examined carefully, but no pulsation could be detected. On the 4th instant, however, it pulsated slightly, though very perceptibly. On the 5th the pulsation had ceased, and never again recurred; it was not, however, until the 8th or 9th, that any appreciable diminution in the size of the tumour began to take place. From that time forward the progress to recovery was uninterrupted; the ligature came away on the 27th inst. (twenty-fifth day), and the wound shortly afterwards healed. On Sep. 5, the patient returned home in good health, the aneurism being painless, quite firm, and very much diminished in size.

[In the last of this series of cases of popliteal aneurism, under Mr. Luke, at the London Hospital, the treatment by compression was again unsuccessful. The femoral was ligatured, but suppuration took place, and the patient died. The patient was 60, admitted Oct. 28, 1852, the tumour the size of an orange, with a powerful pulsation.]

The trial of the compression treatment was commenced on Oct. 31, and extended over the space of a fortnight, during the greater part of which the pulsations in the tumour were very much diminished, but not quite arrested. When it was abandoned on Nov. 15th, the tumour was rather larger than before, very tense, and not at all more solid; and, on account of the pain caused, and the great œdema of the leg and excoriation of the thigh which had been produced, the plan was of necessity laid aside. The apparatus which had been used was one made especially to Mr. Luke's direction, and consisted in a strong elastic strap, which passed round the limb, was fixed behind to a broad leathern splint, and in front held in place the bridge apparatus, in which th ecompressing screw-pad worked. It had the advantage of being extremely light. Two of these were in use—one fitted to the thigh, and the other around the pelvis, to compress the vessel just below Poupart's ligament; they were employed alternately. The man, during the treatment, was on ordinary meat diet, and regularly took an opiate pill every night.

On the 17th, Mr. Luke placed a ligature on the femoral artery, and during the week following some progress seemed to be made; the man was relieved from pain; the tumour ceased to pulsate, and its size a little diminished; it did not, however, become firm. The limb had been enveloped in flannel, and the swelling of the leg

had much subsided. On the 24th, an attack of severe diarrhœa came on, and although shortly checked by medicine, materially diminished the patient's strength, and, subsequently, the tumour became softer still, and the sense of fluctuation was felt more superficially. A week or two later, guided in his opinion by the progress towards the surface which the contained fluid was evidently making, Mr. Luke expressed to the dressers and students his belief, that the tumour would have to open externally, but stated that he should not puncture it, as it seemed desirable to delay the opening as long as possible, to allow the blood to solidify as much as might be. On the twenty-fourth day the ligature came away, and the wound was closing favourably. On the 24th of December, the skin over the middle of the tumour gave way, and a copious gush of fluid blood followed. It was thought at the time, that there was more bleeding than the emptying of the sac would account for, and to prevent further loss, the house-surgeon in attendance had the cavity stuffed with lint. On the following morning, Mr. Luke removed the lint, and with his finger turned out of the sac a large quantity of soft coagula, after which gentle support was applied to the walls of the cyst, by means of a compress and bandage. Inflammation of the sac followed, and involved also the knee-joint, into which an ulceration had extended. Under the severe constitutional irritation induced, the man rapidly sank, and having steadily refused to accede to Mr. Luke's proposal for the amputation of the limb, he died about a month afterwards. At the autopsy there was found complete disorganisation of the entire joint; the anterior half of the aneurismal sac was converted into a pulpy mass; the femoral artery below the ligature was obliterated. The unfortunate result of this case cannot be considered as affording any evidence unfavourable to either of the plans of treatment adopted, being, in all probability, attributable simply to want of constitutional stamina on the part of the patient. Under the continued compression, alike as after the ligature of the femoral, the blood showed little or no disposition to coagulate; and when the tumour had burst, the want of vis conservatrix was again manifested by the ease with which the ulcerative action was allowed to involve the joint. It does not appear that the operation was very materially prejudiced in its hopefulness by the previous treatment, although it must be confessed, that the patient was to some extent weakened by the restlessness and constitutional disturbance it had occasioned. Even if the ligature treatment had been primarily adopted, it is not improbable that the same result might have followed.

[The following case, under the care of Mr. Thomas Wright, Nottingham General Hospital, is one of the most triumphant on record, having been *cured in sixty hours*. Dr. Bellingham, however, relates a case which was cured in 22 hours, and in which the aneurism was the size of an orange. In Mr. Wright's case the patient was aged 36, and admitted August 4, 1853.]

August 12. Compression of the femoral commenced; two clamps being applied, the one over the pelvis, the other in the upper third of thigh, and alternately tightened. The leg up to the knee has been carefully bandaged. The patient is on low diet, without restriction as to the amount of fluid.

13th. Owing to the stupidity of the patient, who cannot be made to understand the management of the clamps, the pressure has been much interrupted during the night. The pulsation in the tumour is not diminished. No pain is complained of; there are no feverish symptoms, and the temperature of the two limbs is equal. Pulse 88. The thigh being very fat, it is necessary to screw the clamps very tight in order to arrest the flow of blood.

15th. Last night, a little before twelve, the patient discovered, while adjusting the apparatus, that the tumour had become quite solid and pulseless. This morning there is not the slightest impulse to be felt on firm pressure, and the mass is circumscribed and hard. He "feels as well as ever he did in his life; has passed two very tolerable nights during the compression;" has not required a single opiate, and has complained of but little inconvenience. He is directed to remain in bed, and, as a precautionary measure, to keep up gentle pressure for a day or two longer.

Sep. 13. Discharged from the hospital in every respect quite well, the aneurismal tumour being small and hard. He has been kept under care for the last ten days solely on account of an attack of urticaria febrilis, which has yielded to the ordinary treatment.—*Med. Times and Gazette, Nov.* 5, 1853, *pp.* 475, 479.

105.—INJECTIONS OF PERCHLORIDE OF IRON AS APPLIED TO THE TREATMENT OF ANEURISM.

By M. MALGAIGNE. (Read before the Academy of Medicine, Nov. 8.)

M. Velpeau tried this remedy for the first time upon a student who was suffering from varicose aneurism, consequent upon venesection, at the bend of the elbow. The artery was compressed above and below the tumour. Eight drops of the perchloride, prepared by M. Dubuisson, were injected, but, upon the removal of the compression, the pulsations returned both in the sac and in the arteries of the forearm. No accident ensued, and on the eleventh day M. Velpeau injected ten drops more. Nevertheless, the aneurism increased, when inflammation having been subdued, it was deemed desirable to put a ligature round the brachial artery a week after the second injection. Inflammation, however, again came on, and the aneurism burst, and the patient considered himself fortunate in recovering at all. Two days previously, M. Lenoir had tried the same plan of treatment for a popliteal aneurism, the size of a pullet's egg. Seven drops of the liquid were driven into the tumour, but the pulsations continued, and twelve days afterwards M. Lenoir, encouraged by the apparent harmlessness of the remedy, injected sixteen drops. No result, good or bad, ensued. As it was possible that the fluid might not have been good, M. Lenoir procured some of that prepared by M. Dubuisson himself.

He first injected six drops; then, no effect having been produced, six drops more; the pulsations, however, continued as before. For six days the patient experienced no inconvenience; but then, sudden pain in the popliteal space came on. On the day following there was inflammation; and, in spite of most active treatment, the result was death ten days after the last injection. Upon examination of the body, the femoral vein was found full of a reddish sanies, and the aneurism was full of a soft clot. These cases, observes M. Malgaigne, show that the surgeon has to encounter both inefficacy and peril in this mode of treatment.

A patient entered the Hospital St. Andre, at Bordeaux, for a crural aneurism, containing, apparently, nothing but fluid blood. M. Soule injected six drops of the liquid, when the tumour immediately became hard. Two days afterwards he employed a second injection of seven drops; severe pain, followed by inflammation, ensued, and, fearing ulceration of the sac, M. Soule applied the ligature to the artery in the usual way, after which the patient recovered.

M. Soule tried the same remedy for a small aneurismal tumour, consequent upon a puncture of the posterior tibial artery. The operation was unsuccessful. An incision was made into the tumour, and it being impossible to tie the ends of the vessel, compression was employed with success. M. Alquie, of Montpellier, injected the perchloride in the case of a traumatic aneurism of the ulnar artery. Severe inflammation came on during the night, and, after proper treatment, M. Alquie was obliged, on the tenth day, to tie the brachial artery. Nine days afterwards secondary hemorrhage ensued, and it became necessary to tie both the upper end of the ulnar artery, and also a large collateral branch.

"Is it not a curious circumstance," says M. Malgaigne, "that after the cure of the first aneurism by M. Raoult, which was no aneurism, and the two successful cases most dearly purchased by MM. Niepce and Serre, all the other cases have gone on badly?" But, to give further evidence, he calls attention to three more cases: one by M. Dufour, surgeon to the Hospital of Lectoure. In consequence of two injections into a large aneurism of the right carotid, the tumour became gangrenous and burst, and the patient was carried off by a fearful hemorrhage. A second, by M. Jobert (who will shortly publish the case); the patient died of gangrene of the limb. A third by himself, in which both the brachial artery and median nerve had been wounded. A traumatic aneurism, which ensued, was injected with six drops of the perchloride; pain in the limb, numbness of the hand, inflammation, and threatening gangrene ensued, when it became necessary to tie the brachial artery, after which the patient recovered.

Thus, there have been, out of eleven operations, four deaths, five serious complications, two cures; but the cures were obtained at much cost. M. Lallemand does not hesitate to acknowledge the dangers attending this mode of treatment. M. Pravaz is no more, but M. Dubuisson confesses the risks, which he attributes to an *excess of hydrochloric acid*. He wishes to preserve the preparation neutral. But

as the preparation of 45° cannot be kept without an excess of acid, he has adopted a solution of 30°, and he promises that this will be sufficiently energetic, and quite harmless. The author then relates some facts, to show how loosely cases have been reported, and he concludes that the injection of the perchloride of iron in varices appears less dangerous than in aneurisms. In the latter, the cures, though possible, are so rare, so complicated with severe accidents, and attended with so many chances of death, that no prudent surgeon would venture to expose his patient to so disastrous a mode of treatment.

An animated discussion succeeded M. Malgaigne's essay, and the conclusion left upon the minds of the audience seemed to be, that although M. Pravaz's bright anticipations had not been fully realised, although dangerous and even fatal complications had followed the employment of the perchloride of iron, yet the fact of the possibility of coagulating blood in the living body had been determined, and that further experiments and investigations in the same path were desirable. M. Leroy d'Etiolles has taken umbrage at the words "that he had entertained the idea of coagulating injections," &c. He stated, in a letter upon this subject, that he had no wish to deprive M. Pravaz of the merit of a disastrous invention, but that he was desirous of showing that the method of treatment by coagulation of the blood need not necessarily perish with the shipwreck of Pravaz's proceedings. Other fluids would coagulate the blood without acting upon the arterial walls, such as alcohol, sulphuric alcohol, the "Eau de Rabel," aluminous solutions alone, as combined with resins, &c.

He also thinks that the injections should not be attempted in the aneurismal sac, but in the tube of the artery above. The canula does not always penetrate the concentric clots so as to reach the fluid blood; consequently, the remedy does not act upon the circulating current. The inflammation in so large a part is often excessive; the amount of coagulating fluid must be more than would be required in the normal tube. He thinks that the clots formed may be driven from the sac by the force of the heart's action, and that they may plug up some of the smaller arteries, and hence cause gangrene of the limb; and he thinks this explanation applicable to the cases related by MM. Malgaigne, Alquie, and Jobert.—*Med. Times and Gazette, Dec.* 17, 1853, *p.* 636.

106.—*On the Preparation of the Solution of Perchloride of Iron.* By M. Burin du Buisson, Pharmacien of Lyons.—[In our last volume, we gave several cases in which Dr. Pravaz's method of treating aneurism, by injecting a solution of the perchloride of iron into the sac, was successful. The object, it will be remembered, of this proceeding, was to induce immediate coagulation of the blood. M. Pravaz used the solution as prepared by M. Burin du Buisson, which is as follows:]

Take of perfectly green sulphate of iron of commerce, 23 ounces; water, 96 ounces; pure filings of iron, 3¼ ounces; sulphuric acid, by weight, half an ounce; introduce the entire into a matrass, or, better, into an enamelled iron vessel, digest on a sand bath until the disengagement of the gas ceases; filter; add to the fluid 16 ounces of liquid hydro-sulphuric acid, and allow the mixture to stand for twelve hours; at the end of this time place the solution on the fire; boil for half an hour and filter. To the filtered liquid add 6½ ounces of pure and concentrated sulphuric acid; place the mixture in a porcelain capsule, or in an enamelled iron vessel, which must be only half filled; raise it to the boiling point, and add pure nitric acid in small portions, until its addition ceases to produce a disengagement of reddish fumes; then, withdrawing it from the fire, dilute the liquid with from 25 to 30 times its weight of cold water, and precipitate all the iron in the state of peroxide with a slight excess of water of ammonia; wash the precipitate repeatedly in distilled water, and, placing it in thin layers on linen, dry it by exposure to the air.

The dried and pulverised oxide is afterwards heated to redness in a wrought iron vessel, which, in order that the heat may not require to be too much elevated, should be wide and shallow; we now obtain the astringent *Crocus martis* of the shops, which, when it is thus prepared, is nothing but pure peroxide of iron.

The perchloride of iron is subsequently obtained in the following manner:—Take of peroxide of iron, prepared as above, 6½ ounces; colourless and pure hydrochloric

acid, 32 ounces; allow them to stand in the cold for five or six hours, then place the vessel on a bath at 212° F., allowing it to remain until the oxide is nearly completely dissolved; this part of the operation should be performed in a porcelain capsule of known weight; decant the liquid to separate the undissolved portion of oxide, and evaporate carefully over the water bath, and with constant stirring, to the consistence of a thick syrup, the weight of which is then to be ascertained; add a quantity of distilled water equal to half this weight; heat for a few seconds and throw the entire on a filter; wash the capsule and subsequently the filter with a quantity of water equal to the first, and to the former liquid add a quantity of the latter sufficient to furnish a homogeneous mixture of the density of from 4·35 to 4·4.

In proceeding thus a very limpid liquid is obtained, entirely pure, at the maximum of saturation, having only a slight acid reaction, and always uniform, keeping perfectly without the formation of any deposit, provided it be preserved in a well-stopped vessel. It is of a deep brown colour when seen by reflected, and of a greenish golden yellow when a thin layer is viewed by transmitted light.

Five or six drops of this liquid, mixed with the white of an egg diluted with six drachms of water, are sufficient to convert the entire in less than fifteen seconds into a mass which, when the vessel containing it is inverted, remains gelatinized at the bottom, and does not become detached until so long a time has elapsed that the water commences partially to separate like the serum of coagulated blood.

This preparation then combines all the conditions requisite to realize the hopes justly excited by the observations of Dr. Pravaz.—*Gazette des Hôpitaux.*—*Dublin Quarterly Journal, Nov.* 1853, *p.* 492.

107.—TREATMENT OF NÆVI BY PERCHLORIDE OF IRON.

By Cooper Forster, Esq.

[This is a subject that has been frequently before alluded to in the medical journals. Mr. Forster used a very pretty little instrument, a wood-cut of which we annex, with a description of the process.]

The instrument is a modification of the one proposed by Mr. Fergusson, and consists of a glass syringe, with an accurately adapted piston, and ending in a narrow platinum tube. In one side of this tube is an oval aperture, and over it another tube is placed, terminating in a trocar point, and having an aperture of a similar size. By rotating these tubes the one over the other, the openings may be made to correspond or not at the will of the operator. An indicator, A, marks their state as to whether open or shut. Mr. Forster does not use the trocar point of the instrument to break up the structure of the nævus, as has been recommended, since he has found it quite ineffectual for that purpose. He believes that the free division of the whole morbid tissue is of the greatest importance to the success of the procedure, since, without it, the coagulating fluid does not obtain access to the blood on which it is to act. Having charged the syringe in readiness, Mr. Forster introduces a narrow-bladed tenotomy knife, and with a few sweeps divides subcutaneously the tissue of the nævus,—if small, from a single point of entrance,—if large, from several. Immediately on the withdrawal of the knife the tube of the syringe is introduced; its indicator pointing to S. The tube is at once turned round, so as to point the indicator to O, and make the openings to correspond; while at the same time a few drops of fluid are forced out. During the withdrawal of the tube, in order to prevent bleeding, a little more of the solution is to be injected, so as to plug the orifice by

the coagulum formed. If the tumour be a large one, the same process of injecting is to be repeated at two, three, or more places.

Mr. Forster informs us that, as far as his experience has yet gone, and it already includes quite a series of cases, this treatment always produces simple coagulation of the blood, unattended by inflammatory action. There is some increase of size in the tumour, and a hard clot forms, which is afterwards slowly absorbed, leaving the vascular tissue of the nævus quite obliterated. As examples we will subjoin the particulars of two cases, the only ones in which the process of cure is as yet complete.

[This statement must be a little modified, for while the above was going through the press, a case occurred in which the injection produced a little inflammation, and caused the formation of a few drops of pus. Mr. Forster had injected about ten minims,—a quantity which, he believes, is more than it is safe to throw in at one spot.]

Case 1.—Thomas H., aged 1½ years. The nævus was of the mixed variety, situated over the left frontal eminence, and had previously been subjected to treatment by the application of nitric acid without success. It was increasing slowly in size, and about as large as a florin, and considerably raised above the level of the surrounding skin. It was injected for the first time on October 2nd; no incision, was, however, made, and, from the imperfection of the instrument used, it was doubtful whether any of the solution was thrown in. No effects followed; and, on the 8th, the operation, according to the plan above described, was repeated. Probably, from five to eight minims were thrown in. The tumour became hard and swollen, but no constitutional disturbance or local inflammation followed; and, within a month, the whole had disappeared, with the exception of a few small cutaneous vessels. For the cure of the latter, a pad of lead was laid over the part, secured by an elastic band, and worn for a week or two. The disease now appears to be perfectly destroyed.

Case 2.—Louisa C., aged 11. The nævus was of the subcutaneous variety, situated on the right side of the neck, behind the border of the sterno-mastoid, and about the size of a small egg. Six years ago, it had been treated at an hospital by ligature; but it had subsequently enlarged to its original dimensions. On the 4th of November, the injection was practised. A free division of the diseased structure having been effected, about twenty minims of the solution were thrown in. As in the previous case, swelling and solidification were the only consequences, excepting that for three or four days afterwards the girl complained of some pain. There was no constitutional disturbance, and no inflammation in the surrounding parts. The induration has since gradually subsided, and is daily becoming less; it now feels of an almost stony hardness, and is about the size of a filbert. The tumour has quite lost its vascular character.

[It appears from a preceding paper (Art. 105) that this treatment when applied in aneurisms has been very dangerous in France. This, however, has not been the case in nævi.]—*Med. Times and Gazette, Dec.* 24, 1853, *p.* 655.

108.—*Treatment of Nævus by Tartar Emetic.*—In a paper read by Dr. CUMMING, before the Western Medical and Surgical Society of London, after alluding to the various methods that have been adopted in the treatment of these tumours, and to the objections that apply to many of them, he stated that the most satisfactory cures have resulted from the inflammatory process being spontaneously set up in them and producing the obliteration of the vessels by suppuration. He then mentioned Mr. Hodgson's plan of vaccinating the tumours, for the purpose of exciting the adhesive inflammation, but regarded it as a doubtful method of cure, since though the tumour might be studded over with punctures, only two or three vesicles might arise, and only a partial obliteration result. He suggested, therefore, the more effectual plan of treatment by tartar emetic, the method of applying which will be best illustrated in the following case:—A child, aged 9 months, was brought to him on account of its having lost a large quantity of blood from a vascular nævus on the right temple, the sides and centre of which had been removed by the vaccinating process. Pressure and cold astringent lotions were first applied unsuccessfully; he

then determined to use tartar emetic, in order to excite a crop of pustules upon the tumour, hoping, that as the eruption produced by this agent resembled that occasioned by the vaccine virus, it might succeed in obliterating the distended vessels. A compound of fifteen grains of tartar emetic, mixed with one drachm of galbanum plaster, was spread upon a piece of thin leather, cut accurately to the size of the nævus. It was placed on the tumour, and on the third day had excited some inflammatory redness, without causing much pain, and but little irritation. On the seventh and eighth day the pustules appeared, and, in order to secure as many as possible, the plaster had been daily pressed gently over the pustules. It was removed on the ninth day, at which time the eruption had completely involved the diseased structure. The pustules ran through their usual course, and, in due time, a slough was detached, and the ulcerated surface healed rapidly, the resulting cicatrix being scarcely noticeable. Eight similar cases were then successfully narrated, in all of which perfect success had attended a similar plan of treatment, the only exception being, in one of them, where the cure was only partial, in consequence of the tumour having been situated too near the lachrymal apparatus to permit of the free use of the tartar emetic plaster. In all the other cases, the scars which resulted were comparatively slight. He then exhibited a patient on whom he had thus operated for two nævi, one being situated on either brow; the cicatrices which had followed were not at all unsightly.—*Medical Times and Gazette, Feb.* 25, 1854, *p.* 195.

109.—*Varicose Veins cured by Injection of the Perchloride of Iron.*—On the 12th of October last, M. Follin presented to the Parisian Chirurgical Society an individual in whom he had produced obliteration of the saphena vein by the method of M. Pravaz. The subject of the operation was a man 52 years of age, who had suffered for many years from a varicose ulcer of the right leg. The saphena was much dilated throughout the greater part of its extent. On the 12th of August, M. Follin injected the perchloride of iron into the vein at two points, one above, and the other below the knee. Coagulation of the blood took place immediately, the vessel became obliterated, and the ulcer healed in eight days. Up to this time the cure has been permanent.—*Monthly Journal of Medical Science, Jan.* 1854, *p.* 68.

110.—*Case of Spontaneous Gangrene.* Under the care of E. Stanley, Esq., F.R.S., at St. Bartholomew's Hospital.—[Spontaneous gangrene does not always take place in parts at a distance from the heart; cases have occurred where the nose, for example, has been the part so affected. The pathology and the therapeutics in these cases are exceedingly interesting, and it is important to know what is the line of treatment to be pursued in such cases. The surgeon generally waits until the line of demarcation has formed before he uses the knife, except in traumatic gangrene, where the measures must be prompt and effectual.] There is, however, some danger in putting off too long the removal of a limb, in case of spontaneous gangrene; and in this opinion we are strengthened by the recollection of a case last summer, under the care of Mr. Hancock, at Charing-Cross Hospital. The patient was a man somewhat advanced in age, who had been attacked in the country with gangrene of the foot, which had gradually crept up the leg; the mischief was allowed to go on until almost the whole limb up to the knee was in a complete state of sphacelus. In this condition the patient was sent to the hospital, when Mr. Hancock had recourse to the only mode of procedure left—viz., amputation; but this measure had probably been too long delayed, and the issue was fatal, as the powers of life had evidently been so heavily taxed that they could not sustain the demands of a capital operation. The majority of our surgeons use stimulating rather than depleting remedies, and simply because patients suffering from spontaneous gangrene, be they either young or old, are generally wanting power. Pain is not an invariable attendant to the process of mortification, though it is in some cases of an excruciating kind. In instances where the distress is great, very large doses of opium are well borne, and very beneficial. The only local stimulation used is warmth, by means of cotton wool or otherwise, this being sufficient for

soothing, and preventing the sphacelus to extend further than the seat of vascular obstruction. The main object kept in view is the preservation of life, and the surgeon watches with a careful eye how far the system sympathizes with the work of destruction going on, being ready at a moment's notice to remove the limb at a distance from the necrotic process, to guard against the sacrifice of the patient's life. —*Lancet, March* 4, 1854, *p.* 247.

ALIMENTARY CANAL.

111.—ON THE OPERATION FOR CLEFT PALATE.

By James Syme, Esq., F.R.S.E., Professor of Clinical Surgery in the University of Edinburgh.

[We have inserted, in former volumes, several interesting articles on this subject by Mr. Fergusson (see *Retrospect*, Vol. xiii., Vol. xxii., Vol. xxiii., and Vol. xxv.). We now give the opinion of another eminent surgeon; this will be seen to be opposed to that of Mr. Fergusson. Mr. Syme says that the alleged advantage of dividing the muscle of the palate, in the way done by Mr. Fergusson, is "an entire delusion." We must let Mr. Syme speak for himself. He says:]

The knife which Mr. Fergusson has recommended for the purpose should alone be sufficient to excite serious doubts as to the practicability of accomplishing the object in question; and if any one believes that he could divide completely the lax and yielding bellies of the palatal muscles by such means, his ideas of operative procedure must be very different from those which most anatomists would be led to entertain from their acquaintance with the animal tissues and the power of instruments upon them. That the muscles in question may be wounded or partially divided, I readily admit; but that they can be completely cut across, and still more, that they can be so with certainty, I no less positively deny. And if the division is only partial, it must be equally incompetent to produce the effect desired, as an imperfect section of the adductor muscle of the eye-ball is found to be for the cure of squinting.

The next point for consideration is the amount of advantage to be expected from division of the palatal muscles, supposing it were practicable. If they remain undivided, it is said there will be a constant tendency to separate the raw edges, and prevent union; while if they are divided, the palate being rendered lax and flaccid, will be in the most favourable condition. But it may here be asked, does the presence of muscular contractility in other situations impede union? In harelip, when the patient cries, the edges of the fissure are drawn so completely aside as nearly to efface the appearance of a lip; yet, if the operation be properly performed no inconvenience is experienced from this source, and a sound union is accomplished with almost absolute certainty. In wounds of the eye-lids or cheek, even when attended with a considerable loss of substance, and when the raw edges are widely separated by the muscular contraction, no difficulty is found in keeping or uniting them together. It seems, indeed, as if, through some intuitive influence of the vis medicatrix, the muscles of the part concerned cease to contract with violence, and merely give that degree of tension or firmness which is well known to favour the adhesive process. On the other hand, there can be no doubt that if the palate admitted of being rendered perfectly lax and flaccid, it would then become very unfavourably situated, either for the performance of the operation, or for the accomplishment of a satisfactory result, since, as every practical surgeon knows, there is nothing more opposed to sound union between the surfaces of a wound than the soft and flabby state which results from redundance or relaxation of the textures. From what has been said, it will, I trust, appear that complete division of the palatal muscles is impracticable,—that it is not requisite for a successful issue—and that, so far from being so, it would really be adverse to the object in view.

I may here remark, that very serious doubts have been entertained as to the expediency of performing this operation at all, since it cannot be attempted with any prospect of success until the patient is old enough to abstain from voluntary resistance; and then the organs have become so practised in overcoming the difficulties of their imperfect condition, that closure of the fissure, so far from being always beneficial, sometimes appears injurious to the distinctness of the articulation. But

as the operation, if undertaken, should be conducted as far as possible to assure a satisfactory result in regard to the accomplishment of its immediate object, I shall now offer some remarks upon the different steps which are required on the occasion; and as it may be supposed that, although the principle of Mr. Fergusson's operation has seemed to me so questionable, there is perhaps something in the mode of its performance deserving of attention, it will be proper to inquire particularly into the method which he recommends.

Mr. Fergusson advises that, in the first place, the muscles should be divided by cutting on each side deeply into the pterygoid fossa with his triangular knife, and then using scissors to complete the process. Now, granting that the object in view may be thus accomplished, which I entirely disbelieve, it is at all events evident that the patient's throat must be in a painful, irritable, and bleeding state when the next step is undertaken. But this step is of the most essential importance, since it is nothing less than placing the edges of the fissure in a condition admitting of their sound union, by paring them so smoothly and accurately that, without any undue loss of substance, the two lower surfaces may allow of perfect adaptation. How a process so nice and delicate is to be executed when the parts are obscured by blood, and the patient's power of self-command has been impaired or expended in enduring the much more painful preliminary proceeding, I am not at a loss to understand any more than the possibility of paring the edges of the fissure, as Mr. Fergusson advises, by seizing the uvula and cutting towards the commissure, especially with such a knife as the one he recommends for the purpose, which is thick and narrow instead of being thin and broad as it ought to be. How the stitches are to be got in does not very clearly appear from Mr. Fergusson's description; but his advice to take them out on the second or third day seems in the highest degree objectionable, since the union, however perfect in the first instance, can then have little power of resisting pressure, either from food or the tongue, independently of the disturbing influence of the pharyngeal muscles. The threads should penetrate the whole thickness of the palate, and be tied with no more force than is sufficient to retain the edges in contact, so that in the event of union taking place, they may neither cause sloughing of the portion included nor cut their way out by ulcerative absorption. In the case of a young lady, on whom I lately operated with such success that the adhesion was complete to the very tip of the uvula, one stitch was removed on the eighth and the other on the tenth day.

In performing the operation, the best way of proceeding is to place the patient on a chair in a good light, then to seize one edge of the fissure at its middle by sharply pointed forceps, and introduce the knife, which should be thin and lancet-shaped like the one of this form used for the extraction of cataract, a little above the commencement of the cleft, and cut evenly down from this point to the extremity of the uvula so as to detach a slice of sufficient thickness to expose the submucous textures. The same process being repeated on the other side of the fissure, nothing remains but to introduce the stitches, which is best done by means of a slightly curved needle with fixed handle, which should be directed from without inwards, first on one side of the fissure, and then on the other. The two inner ends of the threads being then tied together, one of the other ends is to be pulled until the knot is drawn through the edge of the palate, and sufficiently far out of the mouth for the purpose in view. Two stitches are sufficient, one being placed at the root of the uvula, and the other midway between this point and the angle of the edges of the fissure. The threads should be tied with the "reef knot," and, in doing so, resiliancy of the textures may be counteracted by keeping the threads in a state of tension. For at least two days the patient should subsist entirely upon fluids, and of these even have a very sparing allowance. He should also, of course, avoid talking, coughing, sneezing, and all other actions calculated to disturb the uniting process.—*Monthly Journal, April*, 1854, *p.* 298.

112.—TWO CASES OF INGUINAL HERNIA,

IN WHICH THE SAC WAS PUSHED BACK WITH THE INTESTINE.

By James Paget, Esq., F.R.S.

[In the first case the patient, a strong and healthy-looking man, was admitted into

St. Bartholomew's hospital on the 19th Aug., 1851. The hernia was of old standing, but on the evening before admission, in consequence of a severe exertion, it became larger than usual, and he could not reduce it entirely. It appeared to be reduced; but he thought "some of it stopped" near the situation of the internal ring. During the night the great pain from the part prevented him from obtaining any rest.]

It seemed probable that this was a case in which either the hernia was returned *en masse* with the sac, or a portion of intestine remained girt at the internal ring, the rest being returned; but it was suggested that, while scarcely any signs of strangulation were yet manifested, the operation might be for a few hours deferred. Half an ounce of castor-oil was given. The patient soon after fell asleep; he slept soundly for two hours, and, on awaking, vomited: and then slept for another hour. His condition seemed unchanged. Five grains of calomel were given, and he again slept naturally for nearly two hours. Then, when he awoke, he looked ill; his face was not so florid, and had an anxious appearance; the parts about the inguinal ring were more tender, and his tongue was rather dry; he was thirsty, and had more severe griping pain; but his pulse was only 67, and had nothing unnatural in its beat.

He had grown worse rather than better in the five hours' delay, and I therefore operated at once. The inguinal canal was laid open in its whole length; and the lower border of the internal oblique and transverse muscles being freely divided, a hernial sac was exposed, extending from the internal to the external ring. During exposure, it became full and tense, and felt as if it contained omentum; but, when it was opened, only serous fluid, with some coagulated fibrin, escaped from it. The walls of this sac were half a line thick; it was white and smooth on its outer surface, and would have contained about half an ounce of fluid. When I passed my finger along and through the sac, towards the abdominal cavity, all at first appeared free and natural; I could feel only a large coil of small intestine, as if an empty ordinary hernial sac had been laid open, and the finger had been passed into a healthy abdominal cavity. But, when the finger was directed far backwards, towards the back of the abdominal cavity, I felt, with its extreme point, something tightly constricting the most distant part of the coil of intestine. It was soon clear that this tight constriction was effected by the mouth of a hernial sac, pushed back with the intestine. I therefore pulled gently on the part of the sac which had been opened, and which lay in the inguinal canal, and presently drew down the remainder of it. This formed a nearly globular swelling, between two and three inches in diameter; it was filled with small intestine, which was dark with congestion, and very tightly constricted by its mouth. The mouth of the sac, sharp-edged, hard, and unyielding, was now divided, and the intestine was without difficulty returned into the abdomen.

[This patient recovered uninterruptedly.]

In the second case the patient, an unhealthy looking man, was admitted Aug. 25th, 1853. He had had a scrotal hernia for twenty-three years, but five weeks ago noticed a swelling appear in the groin, which, by means of the warm bath and an opiate, was easily reduced. The rupture for which he was admitted, did not yield so easily, and, in spite of the measures used for his relief, his condition is thus described:]

He was pallid; his face was expressive of severe suffering; and he often writhed with abdominal pain and griping about the umbilicus. He occasionally tried to vomit, and ejected small quantities of frothy mucus. In his left groin, at and just within the internal ring, one could feel a firm ill-defined swelling; but it was so painful, and so sensitive to pressure, that it was not possible to examine minutely the parts behind it, or deeper than it. In the rest of the inguinal canal, there was a slight feeling of fulness, but no other change, and one might have thought it healthy. The finger, inverting the scrotum, could be pushed into the external ring, and far along the canal, without meeting with any obstacle. The abdomen was moderately pliant, soft, and not tender on pressure. One might have felt nearly sure, that, in this case, the hernia was returned with the sac, but for the patient's account, that it was in this same state five weeks previously; that it had then returned almost spontaneously, and that for nearly six weeks it had not been in the scrotum. But, whatever might be its state, the indications for an immediate operation were sufficient, and were followed.

On laying open the inguinal canal, there appeared in it, and extending just beyond the external ring, a collapsed portion of hernial sac, with thin, opaque walls, containing a small quantity of clear serous fluid. It was but slightly adherent to the sur-

rounding tissues; and, when the lower border of the internal oblique and transverse muscles was freely divided, this portion of sac was found to be continuous with another part, which was distended with fluid, and stretched the internal ring, and seemed to extend far backwards. Passing my finger on the exterior of this distended part of the sac, it seemed to go through a widened internal ring, and thence, without violence, backwards towards the sacro-iliac symphysis, or downwards to the brim of the pelvis; it did not easily pass upwards. Presently I found, that, in passing my finger on the external surface of the sac, as far backwards as possible, it seemed, at the furthest distance, to turn inwards as if towards a gradually narrowing neck and mouth of the sac. I tried to pull down what thus appeared to be the pushed-back sac; but it did not move. I therefore opened the sac at the part distended with fluid, and then pulling it down, at the same time as the parts about the internal ring and the ring itself were pulled upwards and outwards, brought the more distant portion gradually into view. This portion, which had been pushed back behind the internal ring, was about two inches in diameter, and its thickened narrow mouth tightly constricted a piece of small intestine between three and four inches long. The intestine was very dark, and its coats were thickened with congestion and with effused blood; but when the sac's mouth was divided it was returned without force.

[This patient recovered in the same favourable way. Mr. Luke's essay on cases like these, where the sac is pushed back with the intestine, render few observations necessary. Mr. Paget observes:]

In both these cases the rule was confirmed, that the erroneous mode of reduction is apt to occur in none but old herniæ; and this, though at first it may appear strange, is what might be expected: for a condition necessary to the event is, that the protruded intestine should be more tightly constricted than the mouth of the sac is, so that it may be more difficult to push the intestine through the mouth of the sac than to push the sac, or part of it, through the inguinal rings. Now, this condition can scarcely exist, unless the hernial sac have been long protruded, so that its mouth, enclosed within the narrow margin of the internali ring, may have become thickened and indurated, and less extensile than the tissues external to it.

Moreover, these two cases confirm the rule that the reduction *en masse* is especially likely to happen in old oblique inguinal herniæ. The rule is due to the condition just mentioned. In the majority of such herniæ, there is an annular thickening and contraction of the mouth of the sac, which appears to be due to the formation of new and tough fibrous tissue in and external to the peritoneum. The thickening forms a band or ring, one or two lines wide, which, when the mouth of the sac is exposed from without, may be seen and felt as an annular constriction. It is this which constitutes the stricture in a great majority of strangulated inguinal herniæ; this which needs to be "scarified," or thinned and made extensile, when the hernia, strangulated by it, is to be returned without opening the sac. Now such an annular thickening of the mouth of the sac occurs, if not exclusively in the oblique inguinal herniæ, yet far more commonly in them than in those of any other form; and, for the reasons above assigned, it makes them more liable than others to the accident of reduction *en masse*.

Neither of these cases could show exactly the manner in which the hernial sac is removed from its connexions by the force used in the reduction. One could observe no ecchymosis on the outer surface of the sac, no signs of a violent severance of its tissues from those that surrounded it. The appearance was rather as if, though the mouth of the sac might have been violently separated from the internal ring, yet the rest of the sac had been pushed back by the looser cellular tissue around it being inverted, as the tissue round a testicle is converted when it can be pushed into the inguinal canal.

The best collective evidences for the reduction *en masse* appear to be:—1st. The signs of strangulation continuing, or first ensuing, after the apparent reduction of a hernia; 2nd. The loss of a hernial sac, more of which, according to the history of the case, ought to be left in or beyond the inguinal canal; 3rd. A feeling of fulness at the internal ring and, an ill-defined, firm swelling in the abdomen behind or below the ring; 4th. An amount of pain at and about the internal ring, which is quite disproportionate to that in any other part of the abdomen, as well as to the other signs of strangulated hernia; 5. The unusual drawing up of the testicle.

In these particulars, the cases I have related corroborate those already published,

and confirm the rule, that, when these signs are found coincident, we should act in the belief that the reduction *en masse* has taken place. But the cases presented two rare and deceptive features.

1st. In each of them, the pushing back of the sac was so far incomplete, that the lower portion of it, containing fluid, remained in, and in one case projected a little beyond the inguinal canal. Feeling the portion of the sac one might have assumed that no more had ever projected beyond the abdomen. But the case shows that we must count, among the indications of this accident, not only the complete disappearance of a hernial sac, but the marked diminution of one; that it may excite a suspicion, if we can feel, in and beyond the inguinal canal, only a much smaller hernial sac than, according to the history of the case, there should be. If, in either of these cases, the hernia had been properly reduced, its empty sac should have been felt, not only in the inguinal canal, but along the descending portion of the spermatic cord.

2ndly. In the second case, the sac had been pushed from its connexions five or six weeks before the severe strangulation ensued, and, once in the course of that time, intestine had probably been strangulated in, and returned from, the displaced sac. Such an event has not, I believe, been previously recorded: but a single occurence of it diminishes the confidence with which we might expect that in all these cases there would be the history of a very recent reduction of a hernia.

The incompleteness of a displacement of the sac, to which I just now referred, suggests a rule in operating. If, in the suspicion that a hernia has been reduced *en masse*, the inguinal canal be laid open, and no sac at all be found in it, the probability of an erroneous reduction is increased; but if, instead of no sac, one be found containing fluid, we might be apt to conclude that this is the whole sac, and that the intestine has been duly reduced from it. But the cases show, that the part of the sac containing and strangulating intestine may be pushed back from the internal ring, and that another part, containing fluid, may remain in the inguinal canal; they thus establish as a rule, that, in all such suspicious cases, we must not desist in the operation without being perfectly satisfied that all is right in the abdominal cavity, so far as it can be reached from the inguinal canal. In both the cases here related, after the exposure of part of the sac in the canal, the detection of its displaced but still constricting mouth was impossible, except by such an examination as would have been unjustifiable in an ordinary case. The sac's mouth was only just within reach of the forefinger, and the sensation received by the outstretched finger touching the intestine in the sac was at first deceptively like to that from intestine in the abdominal cavity.

I would add a remark on the after-treatment of strangulated hernia, as illustrated by these cases.

The abstraction of blood by nearly a hundred leeches, in the three days following the operation, in the first case, was intended against what appeared to be an active local inflammation of the peritoneum and adjacent tissues, in consequence of the violence used in the displacement of the sac and in the operation. The giving of wine on the third day after the operation, in the second case, was dictated by the fear that a peritonitis would presently ensue, against which treatment might be of little avail.

The effects of both these opposite treatments appeared to be good; and they indicated, as many other facts do, that there are at least two forms in which peritonitis ensues after operations for hernia. In one class of cases, it appears essentially the local consequence of injury; in the other, it is also, and rather, the local indication of a general blood-disease. In the one it is an active local disease, amenable to local treatment; in the other, it is only one part, one feature, of a constitutional disease of low type, which local treatment can scarcely effect for good.

We may probably compare the cases of the two classes with those of phlebitis after amputations; of which some are simple local inflammations of injured veins; others are inflammations of veins, associated with diseases of many other parts, and declaratory of diseased blood. The parallel would hold in many respects, and, among them, in this,—that the peritonitis or phlebitis of local origin and nature ensues very early after the operation, or is continuous (in the case of peritonitis) with that which preceded the operation; while the disease of constitutional origin, whether peritonitis or phlebitis, comes on later, and with an interval of two, three, or many more days, in which no signs of it may be detected. There are similar

differences and correspondences in the earlier and later erysipelas after operations; the former is mainly a local disease; the latter is the localised indication of a general disease; and, as in the corresponding cases of peritonitis and phlebitis, the one is a comparatively trivial, the other a very grave, disorder.

Now, the respective indications of the earlier and the later occurrence of phlebitis and erysipelas after operations, are, I believe, recognised by many; and the time that has elapsed between the operation and the access of the disease is often reckoned among the facts determining the plan of treatment. A similar rule should be held concerning operations for hernia. In general, if peritonitis ensue within twenty-four hours after the operation; or, if it existed before the operation, and continues or is increased after it, it may be assumed to be chiefly a local disease, a simple inflammation of injured parts, which may be treated by local or other bleeding, by abstinence from food and stimulus, and perfect rest; or which, if it be slight, may be left to spontaneous recovery. If, on the other hand, the peritonitis first manifests itself more than twenty-four hours after the operation, it is probably an indication of a general blood disease of some low type, for which opium and well-regulated food, or even stimulants, afford the best hope of remedy.

I need hardly say, that this difference in the time of first appearance must not be taken as alone sufficient for the diagnosis of the two forms of peritonitis, or for guidance to practice; I believe only that it may be reckoned among the most useful indications. Neither may twenty-four hours after the operation be fixed as an exact time by which, according to their advent within or beyond it, we might class all the cases of peritonitis; it is, I believe, a fair general estimate, but nothing more. Nor must the one form of the disease be regarded as exclusively a local, or the other exclusively a constitutional, malady; each is only chiefly the one or the other; and, in different cases, we may find the constitutional and the local elements of disease prevailing in various proportions.—*Med. Times and Gazette, Oct.* 15, 1853, *p.* 392.

113.—RUPTURE TRUSS WITH SCREW ADJUSTMENTS.

By Dr. Neil Arnott, F.R.S., &c.

[The explanation below was furnished to Dr. Quain, by Dr. Arnott, for the purpose of his lectures. Dr. Quain, for the advantage of other surgeons, takes this opportunity of making it more generally known.]

Until about a century ago, the chief remedy or means of security for ruptured persons was a pad placed over the weak part and bound on with straps; but so insufficient did this means prove, that most of the persons afflicted had to withdraw from the active duties of life,—they could not safely lift weights, nor run, nor ride; they could not serve in the army or navy. It was a great boon when the proposal was made to connect with the hernial pad a steel spring, which should keep the pad pressing with a known degree of force against the weak part. In most cases of hernia now, some form of steel truss is employed.

But there are attendant evils which lessen the advantages of the simple spring-truss as at present in use. The fact of its pressure being continued without interruption, and therefore when not wanted, as well as when it is, may produce the following effects:—

1. In cases of large rupture, requiring, of course, strong support, there often arise pain, inflammation, and even ulceration of the skin, rendering insupportable the use of springs of sufficient strength.

2. There occur in every case some absorption and stretching of the flesh pressed upon, and some impediment to the free entrance of the nourishing blood; all these being causes of increasing weakness as life advances.

3. The pressure on the spermatic cord interferes with the circulation in its vessels, as proved by the occurrence of varicose veins, orchitis, and impaired function of the gland.

Many of the forms of the spring-truss, that they may be accurately fitted to particular cases, require in the maker, skill and dexterity, which are not everywhere found; hence much disappointment and expense to patients, and need for more trusses than one.

It appears, therefore, that, if it were possible to give to the spring-truss the three *following* additional qualities, it would still more completely answer its purposes:—

1st. That, after being applied with moderate pressure on its seat, it could be rendered so stiff or resisting that no force outwards of the hernia might overcome it. 2ndly. That this stiffness or rigidity should equally prevent the useless and hurtful pressure inwards of the pad when the person is at rest and the muscles relaxed; and 3rdly. That the construction of the truss were such than any ordinary-sized truss might be fitted accurately to any ordinary-sized person. Now, these additional qualities do belong to the truss with screw adjustments about to be described. The general appearance of this truss is the same as of the two-padded truss in common use. It is represented in the adjoining sketches, Fig. 1 showing it apart or by itself; Fig. 2 showing it applied to a hernia of the right groin. In both figures the same letters mark the same part of the truss.

A main difference between this truss and the common truss is in the construction of the bow. In the common truss, the bow is a spring of a single plate, or of two plates always co-operating; the second plate, called a rider, being simply laid along the back of the principal within the same leathern sheath. In the new truss, the bow has always two springs, but connected in a very peculiar way, so that they necessarily act together whenever the push of the hernia has to be resisted, and they are opposing or acting against each other at all other times, to prevent useless and hurtful pressure on the flesh. This paradoxical result is obtained by the arrangement now to be described. The outer spring of the new truss lies along the principal, as the rider of the common truss does, only not loosely like that, but with one

Fig. 1.

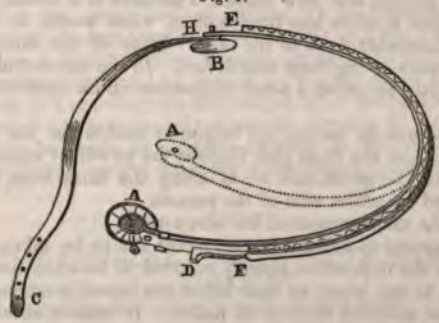
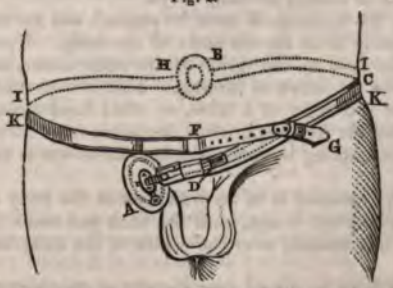


Fig. 2.



A is the front pad which acts in the groin. The dotted lines in Fig. 1 show the form of the truss when not expanded by the screw.

B. marks the back pad, which rests in the middle of the lower part of the back, on the bone of the pelvis called the os sacrum. In Fig. 2 the dotted lines indicate the position of the part of the truss behind the person.

C is the hoop portion, or bow, which carries and connects the pads. It embraces rather more than half the body, resting, not on the ruptured, but on the sound side, in a depression between the prominence above of the haunch bone distinctly to be felt at I, and the prominence below of the thigh-bone near the hip-joint at K. Its long arm slants downwards, quite across the front of the body, to the pad A placed on the hernial opening.

H G is the trap, slightly elastic, which steadies the truss in its place, by passing from the nail of the back pad to a button or buckle at F, near the front pad. It occupies, on one side of the body, a position corresponding to that of the truss bow on the other.

end firmly riveted to the principal spring near the back pad at E, while the other end near the front pad at D, changing the flat form to that of a round wire cut as a screw, passes through a staple projecting from the principal spring at D, to receive there a screw-nut fitted to it. This nut, when turned, draws the round end of the outer spring through the staple, and thereby opens or expands the whole bow to any desired degree. To render the opening action more energetic, the springs are not placed in complete contact, but held a little apart by a waving wire laid between them. The bow thus opened out to fit exactly the size and shape of the person, almost without pressing on it, becomes, at the same time, so strongly rigid or stiff, that no pressure of a hernia can overcome it. The remark may be made here, that, as the bones of the pelvis are joined together immovably, a rigid truss, once well fitted to the pelvis, can need little future adjustment. The front pad of such a truss may be compared to a rock placed at a door to prevent opening, but which does not press against the door unless the door be pressed against it.

There are two other useful qualities belonging to this truss which do not belong to others:

1. It retains the advantages of the ball-and-socket joint for the front pad, while it avoids a great evil connected with it. The jointed pad applies itself exactly to the form of any surface on which it has to rest, and this was deemed a great merit of the truss in which it was first used. Surgeons now know, however, that the joint, at the same time, facilitates much the escape of the hernia,—for the ball becomes as a fulcrum, on which the hernia, working with the pad as a lever, can overcome the resistance of the spring, and free itself. The force in a hernia required to lift the edge of a jointed pad is often less than half of what would be needed to lift the edge of a pad immovably fixed to the bow. Many of the failures of the common double-padded trusses spring from this defect. In the screw-truss, after the jointed pad is once perfectly adjusted, a small ring-screw on its back completely clamps or fixes the joint.

2. In the screw-truss, by having the button or buckle for the strap moveable to different distances from the front pad, there is the power of causing the pad to rest higher or lower in the groin, and so of using the same truss for femoral and for inguinal hernia, and for either side of the person.

Directions for the management of the screw-truss.

1. The measurement to be sent to the maker has to be taken by a tape passed round the body in the depression already referred to between the letters I I and K K in Fig. 2,—that is to say, about an inch below the lateral prominences of the haunch bones. A medium measure there is 35 inches. In connexion with each pad of the truss, there are, near the extremities of the bow, three holes, allowing the effective length of the bow to be altered in many ways.

2. Before putting the truss on, it must be opened out or expanded by the main screw at D, so as nearly to fit the diameter of the body. It would strain the parts too much to open the bow by the action of the screw alone, therefore the ends must be held asunder while the screw is turning. This is conveniently done by placing the back pad under the edge of a table, or other fixed object, and then lifting the front pad upwards by the left hand, while the other hand turns the screw. When so held open, the back spring is slackened, and the screw is turned by the slightest force.

3. The truss thus expanded is to be drawn on to the body from the sound side, or that on which the rupture is not, until the back pad reach the middle of the back, and the front pad has crossed over the centre of the body to its place in the weak groin.

4. The front pad is to be placed over the site of the rupture as shown in Fig. 2, with its length obliquely upwards and outwards, that being the direction of the passage in the flesh along which the hernia has to descend, and with the lower end of the pad resting near the upper and outer corner of the central bone of the pelvis, called the os pubis. Of the exact position which best restrains the hernia, the patient himself will soon be able to judge. If, on making the effort to cough, he finds that the intestine does not descend, he may conclude that the position of the pad is good, and the restraining action sufficient. He should then tighten or clamp the ring screw which fixes the pad.

5. The final adjustment with the main screw at D, is to determine the amount of

restraining pressure. The bow has to remain expanded so as to leave just the degree of pressure which will hold the truss, steadied also by the strap, in its place, and which can be easily borne. By turning the screw nut with the key provided in the direction of an entering cork-screw, the bow is opened further, and the pressure is lessened. By turning it in the contrary direction, the contrary effects follow. Even half a turn of the screw makes a great difference. However small the motion of the main screw to be made at any time, the back spring should always be rendered slack during the change, as already explained.

6. The truss-trap is to be made moderately tight, as it thus steadies the truss in its place without needing much help from the pressure or binding of the truss itself. There is this further reason for using a proper strap, that the direction of the pressure from pad to pad in the trusses used without straps is not that most favourable for restraining the hernia, while the pressure made partly by the truss-spring, and partly by the strap, is in the best direction.

7. After this truss has been used for some time, it will be worn more pleasantly over the inner shirt of cotton or flannel than under it.

8. The hernia should never be allowed to remain down, for, by then acting powerfully as a wedge, it quickly widens the hernial opening.

9. It is rarely necessary to wear a truss in bed, but it may be expedient occasionally to put the truss on and take it off while in the lying posture.

When hernia exists on both sides, a double truss is wanted. This can be made with the same qualities as the single truss, only having shorter bows, which do not cross in front, but pass from the groins to the large pad behind by the shortest ways.

Caution.—When the screw-truss is wound up, or expanded by the screw, the springs are on the strain, and an attempt then made to force the pads towards each other, might break a spring. This attempt can never be made but from thoughtlessness, as no purpose can ever be served by it; but there is no risk, when the truss is wound up, in expanding the bow to put it on the person.

[The truss has been satisfactorily made by Spratt, in Brook-street, Hanover-square; but it may be made by all truss-makers, for Dr. Arnott has declined to derive any pecuniary advantage from its construction.]—*Med. Times and Gazette, Dec.* 3, 1853, *p.* 573.

114.—ON THE SURGICAL TREATMENT OF HEMORRHOIDAL TUMOURS.

By Henry Lee, Esq. (Read before the Medical Society in London.)

[In the treatment of these cases by nitric acid, benefit must not be expected to be derived till the small ulcers made by the caustic begin to heal. By the contraction of these the descending part, which is the lining membrane of the bowel, will remain in contact with the other coats of the bowel. If a considerable portion of membrane has descended, we may select certain portions, or we may limit the action of the acid by applying a small quantity at a time, by shielding the surrounding surface with a paste made of chalk water; but in all cases we must prevent the acid coming in contact with the thin skin around the margin of the anus.]

Every portion of mucous membrane to which the acid extends should be as completely deprived of vitality as possible, since the degree of pain experienced will necessarily depend upon the remaining sensibility of the parts.

Unless these conditions are observed, the application of nitric acid, or of any other caustic, to the mucous membrane of the rectum, may prove as serious an operation as that for which it is intended as a substitute.

The nitric acid used in such cases should be the strongest that can be procured; that which is usually kept by chemists under the name of the strong nitric acid does not effectually destroy the surface to which it is applied; and when used, it therefore produces more pain than the strongest acid, and cannot moreover be so certainly relied upon to accomplish the intended purpose.

The most convenient way, perhaps, of applying nitric acid, when the tumours can be protruded, is to encircle their base with an instrument which will at the same time hold them in their situation, and make sufficient pressure to prevent hemorrhage in case they should be disposed to bleed. If necessary, any portions of the hemorrhoidal tumours, or of the mucous membrane, may be removed with a pair of

curved scissors, and the cut surfaces immediately wiped dry, and touched with the acid. If the application of the acid be made before any bleeding has taken place, the blood in the divided vessels will become coagulated, and the vessels permanently healed.

Care must be taken in performing this operation, when any portions of mucous membrane have to be excised, that the pressure completely commands the hemorrhage; for if any blood escape from the part it will become mixed with the acid, and thus prevent it from effectually acting upon the surface to which it is applied. The instrument which is best adapted for restraining the hemorrhage under these circumstances, and for holding the prolapsed tumour in position, consists of two parallel curved plates of steel with their internal edge slightly indented. These are connected together at their extremities, and by means of a screw or spring may be made to exert the exact degree of pressure required.

There is a large class of cases which generally pass under the common name of piles, which have not an inflammatory origin, and are not connected with any particular enlargement of the hemorrhoidal veins. In the cases alluded to, the inconvenience arises from portions of the relaxed mucous membrane becoming inverted and being griped by the muscular fibres situated at the lower part of the rectum.

The insensibility of the mucous membrane in this complaint frequently causes the symptoms to be referred to the neighbouring parts, and therefore the disease may exist without being recognised. A patient will complain of a dull pain over the sacrum, or a heavy aching pain in the perineum, which neither he nor his surgeon can satisfactorily account for. In the course of time some other symptom presents itself, which draws attention to the rectum. The usual internal remedies for piles may now be administered, but these are found to produce no ultimate benefit, since the disease depends upon a mechanical cause.

In cases where the mucous membrane of the rectum has thus acquired an habitual disposition to "bag," it frequently happens that no medicine applied either generally or locally will afford permanent relief. The loose folds of membrane, which may or may not be connected with hemorrhoidal tumours, will descend again and again, and sometimes keep up irritation in the part for years.

Permanent relief in such cases can only be afforded by such means as tend permanently to brace the mucous membrane of the bowel. The simplest, as well as the most efficacious method of accomplishing this is to remove one or two longitudinal folds of mucous membrane in the same way as above recommended for the removal of hemorrhoidal tumours. It is not necessary to remove the precise portion of membrane which has been protruded. The destruction of any portion after the wound has healed will have the effect of bracing the remainder. In this, as in the operation for hemorrhoidal tumours, it is the process of cicatrisation which cures the disease.

These observations, published in 1848, have been fully confirmed by increased experience. The application of the strong nitric acid to hemorrhoidal tumours of all kinds has now become very general, and there appears at present some danger lest this very useful remedy should be brought into discredit by being indiscriminately applied to all cases.

No satisfactory account has, as far as I know, been hitherto published, giving a description of those cases in which the application of the nitric acid alone is required, and those in which this will not prove effectual. To attempt to supply this deficiency and to describe the mode of proceeding which I have adopted where the application of the nitric acid alone is not sufficient, are the principal objects of the present communication.

A distinction might be drawn between different kinds of hemorrhoidal tumours founded on their different anatomical characters; but since these characteristics are themselves continually undergoing changes, such a distinction would be of little practical value.

The cases which are met with in practice may be much more simply and conveniently divided for the purpose of treatment into those which bleed, or are composed of a soft vascular substance; and those which do not bleed, or are formed of firmer tissue.

1. For the first of two classes of cases, the application of the nitric acid is an *excellent* remedy, and in the great majority of instances no other means of surgical

treatment are required. The nitric acid, when applied, penetrates the substance of the tumour, and produces its effect as described by Dr. Houston, either by causing a superficial slough or by obliterating the vessels of the part. It possesses the very great advantage of giving very little pain if properly applied, of not requiring the confinement of the patient, and of being, as far as I have seen, perfectly safe.

[Where the mucous membrane, by exposure and constant attacks of inflammation, has lost its character and become more of an articular character, though the application of nitric acid does no harm, yet it does not effect much good, because it does not cause contraction by producing a cicatrix.]

Whenever there is reason to believe that the application of the nitric acid alone will not act sufficiently upon the mucous membrane, the plan I have now for some time adopted is as follows;—the affected parts are first made to protrude, and then embraced by a broad forceps, made upon the plan of the instrument described by me in 1848.

The instrument consists of two parallel thin blades, with their opposed surfaces roughened, and closing by means of a spring. This may be made to exert any degree of pressure which may be required. With this instrument the prolapsed part is seized, and such a portion of it as may be deemed expedient is cut off on the side of the "clamp" next to the operator with a curved knife made for the purpose. The cut surface is then touched with the strong nitric acid, or with the actual cautery. The parts are returned into their natural position, and the operation is completed. This plan is equally adapted for the removal of hemorrhoidal tumours, and the excision of portions of relaxed mucous membrane, where no hemorrhoidal tumours apparently exist. The forceps retain their hold of the base of the prolapsed part after the requisite portion is removed. The cut surface is thus prevented from either bleeding or retracting, and it is held in a convenient position for the application of the cautery or caustic. This application is as essential a part of the operation, as securing any bleeding vessels is after an operation in any other part of the body.

It will frequently happen that the parts cannot be sufficiently protruded to be conveniently seized by the forceps which I have described. I have then performed the operation very satisfactorily in the following way:—a rectum speculum has a slide upon one side which may be removed; this is made to fit accurately into grooves on each side, so that by being withdrawn to a greater or less extent, a corresponding aperture is left in the side of the instrument. When the speculum is introduced, the slide is partially withdrawn, and the instrument moved about until the tumour, or the portion of mucous membrane required to be removed, projects into it. The slide is then closed, and the tumour is firmly held between it and the rest of the instrument; the projecting portion may then be cut off within the speculum by a long narrow knife, and the cut surface touched as before with the nitric acid, or with the actual cautery. Or, in case it should be deemed advisable to remove a longitudinal portion of the mucous membrane, the operation may be varied as follows:—the speculum, instead of being made single, is made double; that is there is one speculum within another so arranged that the outer one will revolve upon the inner. Each part has an oval aperture at its side; when these apertures correspond, a tumour, or portion of relaxed mucous membrane, will readily project into the speculum. When the part to be removed has thus passed through the corresponding apertures, the different portions of the instrument are made to revolve upon each other, and thus the aperture is diminished, until the condemned part is embraced between its opposite sides. Being thus firmly held, the operation is completed as above described.

All the instruments which I have mentioned, are made by Mr. Matthews, of Portugal Street; and although they appear very simple now that they are finished, yet

a considerable amount of time and patience has been required in order to get them adapted to their intended purpose.—*Association Medical Journal, March* 10, 1854, *p.* 211.

115.—TREATMENT OF HEMORRHOIDS BY THE GALVANIC CAUTERY.

By Richard Steel, Esq., Abergavenny.

[In the present case the concentrated nitric acid had been applied, but had failed. It was determined to try the galvanic cautery.]

The apparatus which we have used for igniting the coil of platinum wire has been made by myself, and consists of a modification of Wollaston's battery of a dozen pairs, so contrived as to admit of being conveyed from place to place with the certainty of not deranging it; and it is set in action with ease and readiness when required. I had previously used a Grove's battery, which I had by me, but felt it desirable to arrange a battery better suited to be sent to a distance from home, and then found immediately ready for use.

The idea of using this plan of treatment for hemorrhoids was suggested to my mind on learning the satisfactory results of the galvanic cautery as used by Mr. Marshall, of University College Hospital, for the destruction of morbid growths, also for producing artificial contraction of mucous membrane, especially of that lining the vagina for the cure of prolapsus uteri. Having repeatedly employed the method so suggested for removing erectile tumours and semi-malignant growths, I was struck with the comparative painlessness of the application, and at once conceived the idea of applying it to the treatment of hemorrhoids. I was confirmed in the idea on examining a case requiring an operation, and which presented so large a mass of redundant matter, that I was anxious to avoid, if possible, inflicting the severe pain involved in the repeated use of the acid on the one hand, and the danger of hemorrhage following excision on the other. Here was a diseased mass to be destroyed, and relaxed mucous membrane producing prolapsus to be contracted; the loss of substance caused by the actual destruction of diseased tissue primarily, and subsequently by the separation of sloughs, secured the first indication; the contraction of the cicatrices secured the second. The ignited platinum coil being applied more or less deeply, or over greater or less surface, will produce any amount of destruction of parts or of contraction that may be necessary. The smaller amount of pain and of danger to the patient is such, that I shall in future use it in the treatment of this disease, in preference to any other method with which I am at present acquainted.—*Association Med. Journal, March* 17, 1854, *p.* 246.

116.—*Case of Hemorrhoidal Tumours treated by the Galvanic Cautery.* By Elmes Y. Steel, Esq., Abergavenny.—[In this case the patient had suffered from the tumours with prolapsion for thirteen years. He was so distressed with the complaint, that he had been compelled to leave the army. He had been under treatment in London, but had not obtained relief. Mr. Steel says:]

On examination, I found a mass, fully of the size of a cricket-ball, consisting of hemorrhoidal tumours, varying in intensity of colour and in degree of hardness, but all exquisitely tender to the touch. Having found by experience that the operation by ligature, however modified, was often followed by intense suffering, inducing irritative fever, whereas the application of concentrated nitric acid was always safe, certainly less painful and frequently quite as successful, I determined upon using the latter method in the first instance.

Accordingly on the 29th of last November, I applied the acid freely to the more prominent parts of the internal mass, avoiding the outer ring, which I had smeared with oil in the usual way. The pain thus occasioned was severe at the time, and continued for some hours, not altogether subsiding for several days, although not such as to require confinement to bed.

On December 4th, I found the hemorrhoidal mass somewhat lessened. A second and third application, at intervals of ten days, were followed by similar results; the hemorrhoidal tumours having sensibly yielded to the treatment, but still presenting *a formidable* appearance.

At this time, the suggestion of the galvanic cautery having been made to me by my cousin, Mr. Richard Steel, and he having supplied me with a battery of his own contrivance for the purpose, I determined upon resorting to it for the further treatment of the case.

On Jan. 18th, I proceeded to touch the more prominent of the remaining tumours with the ignited coil. The pain was comparatively so trifling, as to be thought insignificant; and immediately after the return of the gut, my patient walked about the house as if nothing had been done.

On February 8th, the parts which had been touched by the cautery were found to have sloughed away, leaving sulci, which will, I doubt not, on cicatrisation becoming complete, have effectually promoted the contraction of all redundant mucous membrane. The cautery was a second time applied with similar results, and so effectually, that the patient can no longer protrude the hemorrhoids sufficiently to admit of external examination. He can now use any exertion, such as lifting heavy weights without inconvenience; and for the first time during many years he has relief from his bowels without pain or hemorrhage. He says that the galvanic cautery is painless in comparison with the nitric acid application: and I can vouch for the fact of its efficacy, as well as for the ease with which it can be applied to any extent that may be required. In a word, I feel assured that it is on every account a most valuable, safe, and convenient application for the removal of hemorrhoidal tumours.—*Ibid, p.* 246.

117.—CASES OF INTERNAL HEMORRHOIDS.

By T. J. Ashton, Esq., Surgeon to the Blenheim Dispensary, &c.

[External hemorrhoids are commonly defined to be those covered by the thin integuments of the anus, and situated superficially to the sphincter muscle. There are others, however, differing in situation, and in the structures implicated, which are of more troublesome and serious character. The following are cases of the kind:]

Congestion of the Mucous Membrane of the rectum, attended with great pain.—A. S., aged 32, a carver, of ordinary stature and conformation, bilious temperament. Some years since he suffered from irregularity of the bowels; latterly he has been very costive. In the early part of November, 1852, he experienced great pain at stool, also aching and extreme discomfort at the fundament while at work; this was sometimes so severe as to compel him to go home. Slight bleeding from time to time took place. He applied at the Blenheim Dispensary, December 7th, 1852, complaining of great pain at the fundament.

On separating the margins of the anus, the mucous membrane was observed to be congested, and the hemorrhoidal veins turgid. Digital examination revealed no distinct tumours. The speculum ani showed the whole mucous membrane within the limits of the internal sphincter in the same condition as at the margin of the anus. His tongue was coated and notched; the countenance heavy and anxious; pulse more frequent than natural; bowels had not been moved the last two days. Five grains of grey powder and one drop of croton oil to be taken every night; to wash the anus night and morning with yellow soap and water, and to use half a pint of cold water as an enema after each dejection.

He took one of the pills prescribed on the three following nights; the bowels were freely acted on, and he felt much less fulness and aching in the rectum. Ordered to omit the pill, and to take a teaspoonful of a laxative confection, every night; to continue the ablutions, and to use the enemata of cold water.

In three weeks he was free from all disease, and by having recourse to the electuary occasionally, if the bowels were at all confined, he has continued perfectly well.

Internal Hemorrhoidal Tumours in an early stage cured.—J. S., aged 19, a shoemaker, came under my care at the Blenheim Dispensary last year, affected with syphilitic lepra, for which a solution of bichloride of mercury and arsenic was ordered, and he progressed favourably. On the 8th of March, 1853, he complained of having three or four days experienced pain, weight, and throbbing in the rectum, increased at stool, and attended with the discharge of a small quantity of blood. For several weeks his bowels have been constipated, and he has sat at work from an early hour in the morning till late at night. His eyes are dull; the sclerotic conjunctiva slightly

tinged yellow; tongue furred, and the teeth indented into the edges; pulse quicker than natural; skin hot and dry. On examining the rectum, the mucous membrane was observed to be congested, and several small purple lumps were seen immediately within the margin of the sphincter. Five grains of grey powder and one drop of croton oil to be made into a pill, and to be taken at bed-time. To use ablutions of soap and water, and throw half a pint of cold water up the bowel after each stool.

March 10th. The pill acted freely. Has less uneasiness this morning. To take three grains of blue pill, and two of extract of conium, every second night; and a draught every morning of compound infusion of gentian, half an ounce; compound infusion of senna, an ounce; Rochelle salts, a drachm and a half. To continue enemeta and ablutions.

22nd. He has continued the remedies. All the symptoms have subsided, and his general health has greatly improved. To omit the pill, and to take the draught twice a week, and to use the soap and water.

April 5th. Has had no return of the hemorrhoidal affection; the mucous membrane of the bowel perfectly healthy in appearance.

Internal Hemorrhoids; much loss of Blood, attended with giddiness and drowsiness. —R. R., aged 38, was advised to consult me by my friend Mr. Bennett, surgeon to the Bloomsbury Infirmary. About fourteen years since, he first suffered from external piles, which have continued to trouble him more or less up to the present time. Eight years ago, he experienced pain within the anus, and a sensation of the presence of a foreign body. Defecation was difficult, attended with increase of pain and hemorrhage; and from that period he has continued to lose a considerable quantity of blood at intervals; he has also been annoyed by a constant discharge of mucous from the bowel. He has also been subject to constipation, and suffered from flatulence, pains in the abdomen, giddiness of the head, and depression of spirits. His habits of life are temperate.

He came to me on the 10th of November, 1852. His countenance was sallow; eyes dull; lips and gums pale; tongue furred; pulse frequent and irritable; bowels acting scantily and irregularly; has little power in retaining the fæces during any violent exertion; the bladder is irritable, and he has some difficulty in micturating. The anal orifice is surrounded by a margin of loose skin, evidently collapsed external piles; the sphincter ani is relaxed. On introducing the finger within the intestine, two large internal hemorrhoids were felt; these were extruded by a very slight effort of straining; the mucous membrane was then seen in a granular state. He informed me that the hemorrhoidal tumours descended by walking, or riding in any vehicle that shook him much. To take six grains of extract of taraxacum and three grains of blue pill every night, and in the morning a teaspoonful of an electuary, compounded of confection of senna, sulphur, bitartrate of potash, jalap, copaiba, ginger, and a sufficient quantity of syrup. To use ablutions of soap and water night and morning.

Nov. 14th. Has taken the medicines ordered; the bowels have acted every day, but not freely; passed some clots of blood yesterday, and this morning a tablespoonful of bright blood. To continue the medicines.

17th. Has had very little pain, and passed but a small quantity of blood; still complains of drowsiness and giddiness. Examination of the urine demonstrated an excess of urea, and under the microscope numerous crystals of oxalate of lime were seen. To take an ounce of the following mixture twice a day: Compound infusion of gentian, ten ounces; sulphate of magnesia, one ounce; dilute sulphuric acid, a drachm and a half. To inject half a pint of water containing sixteen grains of sulphate of zinc after each evacuation of the bowels.

Dec. 1st. He has taken the medicines regularly, and used the enemata as directed. Feeling so much better he did not think it necessary to see me at an earlier period: has had no sanguineous discharge the last twelve days; a slight mucous discharge continues; he can now retain his fæces during exertion. He was drowsy on one occasion since his previous visit to me, but is not so now; his eyes are bright; countenance clear; pulse 76; irritability of the urinary organs has ceased.

15th. Has continued the medicines, and expresses himself as feeling better than he has done for many years; his countenance is clear and healthy; pulse regular; appetite *good*; he does not suffer from flatulence; has gained strength, and does not feel fatigue *after* an ordinary amount of exercise. To inject cold water only after each stool

This patient visited me a few weeks since, he has continued to take the medicine occasionally, and has not omitted the injection of cold water; the only annoyance he experiences is a mucous discharge from the anus. I examined the bowel; the internal piles were still large, but not turgid; the mucous membrane in a much healthier condition. Removal of the piles was advised in the first instance, but his occupation prevented him laying up for a few days, and, as he now suffers but little inconvenience, he is content to remain as he is.

External and Internal Piles; considerable Bleeding; Palpitation of the Heart.—A. A., aged 56, married, of moderate stature, very stout, applied at the Blenheim Dispensary, Oct. 2nd, 1852, in consequence of considerable losses of blood per anum when at stool. She appears exsanguinated; her lips, gums, and tongue, are colourless; the countenance is anxious and sallow; pulse quick, weak, and irritable; and she complains of violent palpitation of the heart, induced by slight exertion. She has long been of a constipated habit of body, and has not taken much exercise the last several years.

The present attack commenced by itching of the anus, followed by a feeling of fulness, throbbing, and acute pain, the latter extending up the sacrum and down the inside of the thighs. Hemorrhage took place, and after it had occurred a few times, the feeling of fulness and pain became much less. On making an examination, the margin of the anus was observed surrounded by external piles in a state of semi-distension; digital examination of the bowel demonstrated an internal pile on the right side, the size of a cherry, and having a broad base. Directed her to return home, and to confine herself to the recumbent position; to have an enema of a pint of thin gruel thrown up the bowel at once, and to take a teaspoonful of an electuary containing copaiba at bed-time.

Oct. 3rd. The enema brought away a quantity of indurated fæces. The bowels have acted twice this morning, attended with hemorrhage. To continue the electuary at bed-time, and to use half a pint of water containing a scruple of tannic acid, as an enema, after each stool.

6th. Loses much less blood at stool; the confection moves the bowels twice a day. To inject cold water only after defecating, and to use soap and water externally night and morning.

10th. But slight bleeding now occurs; she is much troubled with flatulence. To continue the enemata of cold water and ablutions; to take every night seven grains of compound rhubarb pill, two grains of blue pill, and two grains of extract of henbane; and twice a day an ounce of compound infusion of gentian, five grains of carbonate of ammonia, and a drachm of compound tincture of cardamoms.

20th. Has had no bleeding since I last saw her; countenance brighter, tongue clean, bowels acting regularly. The external piles collapsed, leaving an irregular fold of integument, half an inch in length, around the anal margin.

April 7, 1853. This patient continues free from all pain and inconvenience; she takes the pills occasionally, and has not omitted to observe ablutions night and morning with soap and water.

Strangulated Internal Piles, preceded by excessive Hemorrhage, relieved.—D. B., aged 34, a jeweller, applied at the Blenheim Dispensary, Sept. 27th, 1852; above the average height; of ordinary conformation; bilious temperament; complexion unhealthy; habitual state of mind melancholy; habits of life irregular; has suffered for fourteen years from external piles: during the last four years has lost a considerable quantity of blood from the rectum, and has experienced great pain within the gut.

The present attack commenced on Sept. 25th, with excruciating pain in the rectum, aggravated at stool, and attended with copious hemorrhage. His countenance and lips are pallid; pulse feeble and quick: skin dry and hot; tongue furred. On making an examination I perceived four large internal piles prolapsed and tightly embraced by the sphincter, the fine integument around the anus raised in folds. Ordered him to go home, and to bed. I visited him at his house, and returned the prolapsed piles; in doing this it was necessary to make very firm and continued pressure. To be cupped over the sacrum, and on the perineum. One ounce of castor oil to be taken immediately. Hot fomentations to the anus.

Sept. 30th. Is in less pain; the bowels have acted twice; the piles are prolapsed; they were returned with greater facility than yesterday, and were less congested.

Three grains of grey powder, and four of Dover's powder, to be taken at bed-time, and a teaspoonful of purgative electuary in the morning. To continue the fomentations, and to return the piles should they be prolapsed at stool.

By observing the treatment directed, the acute symptoms soon subsided. I proposed removing the tumours by ligature, but being free from pain, he preferred waiting the chance of another attack. Ordered him to use soap and water externally night and morning, and to inject half-a-pint of cold water after each dejection.

Dec. By following the injunctions given him, he has been free from pain, but the tumours are occasionally protruded, and he has lost from time to time a small quantity of blood.

Remarks.—The above cases present different conditions of internal hemorrhoids, in all of which relief was afforded by medical treatment, without having recourse to any operative procedure. The causes producing the disease are apparent, and were chiefly due to want of exercise, maintaining the sitting position for too many hours, constipation with an overloaded state of the bowels, and other concomitants. When fæcal accumulations exist, it is little use attending to the local affection till they are expelled; but if there be much pain, hot fomentations should at once be applied. After the bowels have been thoroughly freed, they must be kept easy by various laxatives. As many patients suffering from these diseases are affected with flatulence, it is very advisable, after the subsidence of the acute symptoms, to prescribe a tonic and purgative conjoined, which will have the effect of correcting the debilitated condition of the stomach and intestines, and will also generally succeed in inducing a regular action of the bowels. In all cases of hemorrhoids, ablution night and morning affords great comfort, and is highly beneficial. In internal piles the injection of cold water, after the bowels have been moved, is an important point in the treatment of these affections; the advantage arising therefrom being, first, washing away any irritating excretions, and, secondly, giving tone to the vessels of the part.

In the first of the above cases pain was the prominent symptom, and upon superficial considerations might have induced the belief that fissure of the anus was the cause of the suffering. He had violent pains at stool, but it was not of that sharp, smarting character felt at one spot as in the latter affection; he also had aching in the part, occurring at various periods of the day, and not following the act of defecation as in fissure, neither was there spasm of the sphincter ani. The amount of blood lost was trivial, an dcould have no constitutional effect; his countenance indicated great suffering. That constipation and its concomitants were the cause of the local disorder is evident from the absence of any other source to which to ascribe it, and the result of the treatment verified the conclusion.

The disease in J. S. was chiefly due to the effect of constipation, arising from the very common cause—want of proper exercise, and maintaining the sitting position a number of hours consecutively; biliary congestion had also been induced, and preceded the hemorrhoidal affection. Acting freely on the bowels in the first instance, mild mercurials for a short time, the injection of cold water, and afterwards the use of tonic and purgative medicines combined, so as to give tone and induce a regularity of action of the bowels, restored the patient to health.

The great constitutional effects arising from hemorrhoidal disease, attended with loss of blood, was forcibly marked in the case of A. A. There was the pallid countenance, the colourless lips and gums, the weak and fluttering pulse, the heart excited on the slightest cause, either mental or physical. Here, also, we find constipation the cause of the disease, the removal of which by enemata and laxatives, and afterwards having recourse to tonics, and paying due attention to the regular action of the bowels, had the effect of restoring her to health and comfort.

The case of R. R. presents features not exemplified in the preceding. Besides gain in the rectum and loss of blood, the piles were extended at stool, he was troubled with a constant mucous discharge, and was unable to retain the fæces, when making any exertion, in consequence of relaxation of the sphincter, the reverse of the condition of the muscle in external hemorrhoids, particularly if complicated with fissure when a preternatural contraction of it exists. Irritation was propagated to the urinary organs; but one of the most important features was the fulness in the head and giddiness of which he complained, and involved some consideration with regard to

treatment. From the latter circumstance, he had been advised not to have the hemorrhoidal disease interfered with. But this patient was not plethoric, nor was there any external evidence of cerebral congestion; therefore the symptoms were due to another cause, and examination of the urine revealed the source, arising from a morbid condition of the blood, occasioned by the imperfect action of the several depurating organs, especially of the skin and kidneys. Having freely unloaded the bowels, and afterwards attending to keep them regular, and by inducing a healthy performance of the functions of the other abdominal organs, no evil followed the cessation of the hemorrhoidal flux; and it is evident, had he been able to lay up for a day or two, an operation would have entirely freed him of the disease, without the slightest fear of mischief occurring to the head; but while he pays strict attention to himself, and nothing of importance takes place to derange his general health, he will continue without other annoyance than the mucous discharge from the bowel soiling his linen.—*Lancet, Jan.* 14, 1854, *p.* 36.

118.—ULCER OF RECTUM, TREATED BY SIMPLE INCISION.

By Wm. Oliver Chalk, Esq.

[This patient, aged 31, states that he has suffered for many years from habitual constipation and hemorrhoids. But from June 1852, to March 1853, he seems to have suffered from a compound of all the symptoms of ulcer of the rectum and spasmodic stricture of the urethra. Enemata gave him the only, though but slight, relief. His sufferings appear to have been almost intolerable.]

He has lately obtained slight relief by sitting on a piece of cork, so made as to push up and support the anus; but his sufferings have become so insupportable, that, unless they are speedily mitigated, he must, he says, give up his occupation, which is that of watch-pallet making. His general health is bad; the digestive functions are much impaired; tongue covered with a thick buffy fur, and red at its point; there is great epigastrial tenderness; pulse 84, full and jerking; skin hot and dry, especially in the palms of the hands; he is often assailed with severe abdominal pains, nausea, loss of appetite, and occasional vomiting of undigested food when the pains in the rectum are violent. He is subject to severe headaches. A consideration of the local symptoms here narrated, led me to conclude that they were occasioned chiefly by an ulcer of the rectum, which there was no difficulty in discovering. It was situated near to the point and to the right of the coccyx, of irregular form, as near as one could estimate by the touch, the size of a shilling, and excruciatingly painful under the examination. The sphincter was very unyielding, and there was a deep fissure on the right side extending to the verge of the anus. It would occupy too much space in these columns to describe the local and general treatment that preceded the operation; it need only be said, that his health was greatly improved, and the ulcer slightly. On the 23rd of April, chloroform being previously administered without bringing the patient fully under its influence, an incision was made into the mucous membrane beyond the ulcer, and carried through it and the fissure, in the manner recommended by Mr. Quain in his lectures, thus avoiding the more formidable proceeding of dividing the sphincter ani. A very small loss of blood ensued from the operation. The patient was directed to remain in bed, and an opiate draught to be taken at bedtime. On my visit the following day, at eleven o'clock A.M., I found him suffering severe pain, much excited, hot and feverish, complaining of headache, and possessed with the idea that the operation had proved abortive. I learned that about six o'clock A.M., his bowels were naturally and freely relieved with little pain (a small coagulum of blood having passed with the motion), and again at nine o'clock, but at that time a large pile descended, and made its appearance at the right side of the anus; it was excessively tender, very tense, and of a livid red colour. This circumstance sufficiently explained the cause of his suffering. Some days elapsed before the effects of this accident were remedied, after which the success of the operation became manifest by the subsidence of all the distressing symptoms under which he had laboured so long. On the 13th of June I received a visit from my patient; his general appearance had greatly altered for the better; he said he had not been so well for years, and that he had resumed his occupation.

Were further testimony wanting than that already adduced by Mr. Quain of the thorough efficacy of simply dividing the mucous membrane for the cure of ulcers of the rectum, it would be afforded by the case narrated above, which was interesting from the more than usual severity of the accompanying symptoms, and its complication with hemorrhoids. The ulcer was larger than usual, and the reflex actions resulting therefrom complex and severe; the general health, too, was much deranged, —an unusual occurrence, according to Mr. Quain.

From the history of the case, it would seem that constipation and the continual loss of blood was the proximate cause of ulceration,—at all events, the indications of it (viz., the "bearing-down, aching, and smarting," &c.) did not come on until after the hemorrhage had ceased, that event being marked by an accession of symptoms more especially referable to ulcer of the rectum. It is difficult, as Mr. Quain observes, to assign any reasonable cause for the periodicity in the cessation of pain after an evacuation observable in these cases. In this instance, it generally extended to five minutes only, and never exceeded ten; but whatever it may be, this peculiar symptom, apart from the rest, may almost be considered pathognomonic of the disease. With respect to the contraction of the sphincter ani, it must, I think, be conceded, that the conclusion arrived at by this gentleman is essentially correct, viz., that the condition of the muscle is no more the actual disease than the spasm of the orbicularis in strumous ophthalmia. Of the operation may be said that which can scarcely be affirmed of any other involving a corresponding amount of relief, that the subsequent inconvenience arising out of it is so trifling, as scarcely to be regarded by the patient, while the subsidence of extreme suffering is almost immediate. Henceforth, in all probability, the division of the sphincter ani for this disease will give place to the simpler and safer plan of incising the mucous membrane only; but if otherwise, it is sufficiently obvious, from the successful issue of the cases recorded, that, as a general rule, recourse should be had, in the first instance, to it, and not to the more serious proceeding of dividing the muscle.—*Medical Times and Gazette, Dec.* 10, 1853, *p.* 599.

ORGANS OF URINE AND GENERATION.

119.—ON STRICTURE OF THE URETHRA, AND ITS TREATMENT BY DILATATION.

By William Coulson, Esq., Surgeon to St. Mary's Hospital.

[Mr. Coulson still adheres to the opinion that the perineal section is only adapted to certain cases of obstinate stricture, and that these cases are the exception to the rule. He believes dilatation to be the most simple and efficacious plan, and, in this paper, he considers the kinds of cases in which dilatation may be most successful. He says:]

It is hardly necessary for me to remind you that permanent stricture of the urethra means a contraction or narrowing of the canal at some point, caused by change of structure, from inflammation or the healing of an ulcerated surface. The effects of inflammation, then, in giving rise to permanent changes of structure, are the immediate means by which the narrowing of the canal is produced; and to understand or appreciate the advantages of any mode of treatment it is obviously necessary for you to be acquainted with, and ever to bear in mind, the changes of different tissues which accompany and give rise to stricture of the urethra. The changes now alluded to present great varieties in their seat and extent. They may be confined to the mucous lining of the urethra, or may implicate the membrane and the subjacent tissues at the same time. Sometimes the effects of inflammation are slight, though the difficulty of passing a bougie may have been great. The mucous membrane of the urethra is perhaps injected at certain points, thickened, and has lost its natural elasticity. In some cases, as Mr. Hancock has recently shown, the narrowing of the canal is produced by the deposit of an organised false membrane on the surface of the mucous lining. When the disease has lasted for any length of time, the morbid changes are seldom confined to the lining membrane of the urethra, but extend to the deeper-seated tissues. I shall now merely invite you to remember that as the inflammation extends to the sub-mucous cellular tissue, this structure becomes

condensed, from the agglutination of its interstices by organised lymph; it is also more or less increased in bulk, and when the swelling with condensation has continued for any length of time, the new tissue is converted into a dense, fibrous mass of great resisting power. In some cases it may be so callous and resisting that, on dividing it with the knife, a noise is produced as if one were cutting through a portion of cartilage. This is particularly seen in cases where the inflammation has involved the spongy tissue surrounding the bulb of the urethra, when the whole mass may be found changed into a dense ligamentous substance, or into a "hardened callosity," in which no distinction of parts can be traced. The extent to which these changes occur vary in every individual case. Sometimes the chronic induration and thickening occupy the whole diameter of the urethra, and give rise to a circular contraction of its canal, the stricture appearing as if caused by a mere thread, or extending to half an inch or more of the circumference. In other cases this thickening is irregular and tortuous, or it may occupy only one part of the circumference of the canal. It is also important to remember that there may be several strictures at the same time, one or two occupying the anterior portions of the urethra, and a third seated at the point of union between the bulbous and membranous parts.

The symptoms of stricture are, generally speaking, sufficiently obvious, but I shall not dwell on them at present, as my object is to explain to you the principles on which dilatation should be conducted. Before we have recourse, however, to any method of treatment, it will be prudent to employ certain preliminary measures for the purpose of reducing any excess of irritation or inflammation that may exist. Unless this be done, the use of instruments may give rise to very unpleasant, if not dangerous symptoms; the cure will be greatly retarded, and the hopes of both surgeon and patient sorely disappointed. Having then subdued any inflammatory complications which may exist, your first care will be, by careful examination, to ascertain the seat, nature, and extent of the stricture—circumstances absolutely necessary to be known before you undertake any means whatsoever for its removal.

Various methods have been employed for making the preliminary exploration of the urethra now alluded to, and writers are by no means agreed on the best kind of instruments to be used. Sir C. Bell recommended a ball-headed probe for the purpose, but this instrument does not justify the favourable opinion of it formed by its author, and is now, I believe, entirely abandoned.

Dr. James Arnott invented a particular kind of exploring sound, which was afterwards adopted and modified by Ducamp. Dr. Gross employs a common silver catheter or a graduated bougie, the end of which is tipped with cobbler's wax. When the stricture is not very narrow, M. Civiale informs us that a small gum-elastic bougie covered with soft wax may sometimes be used with advantage, but he prefers for general use very soft wax bougies, with which, according to him, the most exact marks of the stricture can be obtained.

Dr. Bigelow, of the Haward University, United States, strongly recommends gutta percha bougies for taking impressions of strictures. A middle-sized bougie of this kind, if gently heated, becomes quite soft; when rendered sufficiently soft, it is passed rapidly down to the stricture, carried forward by gentle pressure, and then allowed to become firm; it gives when withdrawn a most accurate impression of any inequalities existing on the surface of the urethra. Sir B. Brodie, on the other hand, prefers a full-sized cylindrical bougie made of plaster; this is to be softened by rubbing it with the hand, to be well oiled, and bent into the form of the urethra. For my own part, I believe that it is difficult to lay down any precise rules on this point. Some surgeons are accustomed to a particular kind of instrument, and cannot work with any others; some will select soft bougies, others again find it more easy to explore the urethra with a metallic instrument, and I am inclined to think that the examples we see depicted on books, of delicate impressions left on soft bougies by tight strictures, must be indebted to the artist's imagination for a considerable part or their accuracy. But whatever instrument we use, great caution must be employed during its introduction; and as the obstacles are the same, whether we have recourse to a bougie for the purpose of dilating or of exploring the urethra, I shall now describe to you the best method of passing an instrument into the bladder for the cure of stricture.

Fig. 1. Fig. 2. Fig. 3. Fig. 4.

Fig. 1.—Mark left by a stricture at the curved part of the urethra.

Fig. 2.—Mark left by a stricture at the upper part of the membranous portion.

Fig. 3.—Mark of a ring stricture at the curve of the urethra.

Fig. 4.—Mark of another ring stricture at the same point.

(Copied from Civiale.)

The size, form, and composition of the instrument, will be determined by circumstances which I shall presently notice; I now desire to give you only a general idea of the operation. Having selected a proper instrument, and placed the patient in a standing position against the wall, you seize the glans penis between the little and ring fingers of the left hand, uncover the glans, and draw the penis very gently forwards until it becomes nearly horizontal. The bougie must, I need hardly remind you, be well smeared with oil or some other greasy substance, and should then be passed with a gentle rotary motion till it reaches the prostate. If a sound is used, it should be held like a pen between the fingers; but there are different ways of directing the handle, while the point is being introduced into the meatus urinarius. Some turn the concavity of the instrument directly upwards towards the abdomen of the patient; some turn the concavity downwards; while others keep the handle close to the right groin of the patient, and pass the point on until it will go no further in this direction, after which the handle is brought horizontally forwards, and the instrument pushed with extreme caution and gentleness towards the bladder. When it arrives at the stricture, the sensation communicated to the hand by the obstacle will warn you to proceed with increased prudence; you must, nevertheless, push gently forwards; and in ordinary circumstances, the obstacle being overcome, the point of the instrument passes onwards into the bladder. The passage of the instrument may be impeded by several obstacles, a notice of which becomes necessary. It would be a serious error to conclude that organic stricture of the urethra exists merely because the instrument does not go on readily into the bladder, but appears to be arrested at a particular part of the canal. You have to consider whether the obstacle is one of your own making, whether it depends on the form and kind of instrument you employ, or whether it is caused by the narrowness of the stricture itself. The point of the instrument may become entangled in one of the lacunæ, or in some accidental fold of the urethra; its onward progress may be arrested by spasmodic contraction of the urethra or surrounding muscles, and impediment from this cause is of very frequent occurrence. Again, if you use a bougie which is very small and soft, it may itch and bend against the lower surface of the urethra, and thus give rise to the notion of a stricture existing where none, perhaps, is present; indeed, this is sometimes an insurmountable obstacle to the use of soft bougies. It is evident that the greatest difficulty which you may have to encounter will arise from the nature of the stricture itself. Some conception of this, I presume, has been obtained by the preliminary examination, which will have revealed the precise seat of the stricture and given some general, if not more accurate idea of whether it be narrow, tortuous, &c. In cases of old narrow stricture, where the urine only passes drop by drop, and you have every reason to think that the canal is not only much reduced in calibre, but tortuous, soft bougies of a small size must be *tried at first.* Some surgeons recommend a fine catgut bougie; others a very small

gum catheter, sufficiently curved, but without the wire. These instruments are apt to become soft and yield; but a dexterous hand will generally distinguish between the obstacle produced by narrowing of the canal, and that caused by the resiliance of an elastic instrument, which bends without entering the stricture. Should it be found impossible to introduce a soft instrument, recourse must be had to a metallic one, the curve of which is smaller than that of ordinary catheters. In some cases, the obstacle to the passage of the instrument evidently arises from a vital action of the contracted part; and here many excellent surgeons have given the precept, that the point of a large bougie should be gently pressed for some time against the anterior surface of the stricture, which gradually yields. It has been supposed that the pressure of the instrument alters the sensibility of the canal, and relieves the state of the spasm which has been superadded to the organic disease. However this may be, the practice is good, and often succeeds when other means fail. M. Civiale even carries the principle further. In very difficult cases, he recommends us to pass down daily to the stricture a bougie of large calibre, and leave it in contact with the contraction for some time. When the sensibility of the part has been thus diminished, he takes a conical gum-elastic bougie, and having introduced its fine point into the orifice, he presses it gently forwards, continuing the pressure if necessary for several hours. The chief point is to know whether the bougie has entered the stricture, or is merely pressing against the walls of the urethra, and this is ascertained by drawing the instrument slightly back; if it has entered the stricture, we feel some resistance to withdrawing it, which shows that it has been grasped by a contracted orifice. When the stricture is long, callous, and resisting, the bougie may cease to advance, after having penetrated for a certain distance into the orifice. It is now useless to go on, for the instrument will merely curve in the part outside the stricture. When this occurs the bougie should be withdrawn, and a larger one passed in, and even if it make little progress the marks left on it will furnish additional information relative to the nature and degree of the contraction,—two very important guides for our future conduct.

The instruments employed in the treatment of stricture by dilatation are of two kinds, and of numerous forms. Some are soft, being composed of wax, gum-elastic, gutta percha, or plaster. The plaster bougie is a composition of diachylon, wax, and oil, mixed in such proportions that it is pretty hard when cold, but becomes soft when warmed. Some instruments are hard, or perhaps it would be better to say "firm." These are made of catgut, silver, composition, metal, &c. A great deal has been said for and against these different kinds, some surgeons preferring one kind and some another; but it is impossible to lay down any universal rule, and say plaster bougies are better than metallic sounds, or *vice versâ*. The nature of each case must in a great measure influence your choice of an instrument. Some general remarks, however, may be useful. Whalebone bougies are now entirely abandoned, and catgut bougies nearly so. The latter are rough, and very liable to wound the surface of the urethra, or even make false passages. The common plaster bougies are not easily introduced; because, as I have said, they become soft, and are apt to stick in the urethra. They take no mark of the stricture; yet they must be employed in cases where the contracted parts are tortuous and of small calibre. Mr. Liston, however, rejected soft bougies altogether, because "there is no possibility of guiding their points, or ascertaining what direction they take." When the stricture was moderate he employed a plated metal sound; and when very tight, he used a small silver catheter. In my own practice I generally prefer metallic sounds, but I am far from asserting that there are no cases in which soft bougies may be used with advantage. Dr. Lawrence is another high authority in favour of metallic sounds: with them, he says, "We obtain a much greater power than with the flexible plaster bougies; from their smoothness they pass much easier along the urethra; and, from their unyielding nature, we obtain a much greater power of guiding the point of the instrument, and of determining its general direction." These are essential advantages in certain severe cases, where some degree of force must be employed, and where the surgeon must be guided by his anatomical knowledge.

The forms of instruments employed for dilating a stricture are various, but may be reduced to the conical, the cylindrical, and the fusiform.

[The rule in cases of stricture is to introduce a bougie the same size as the stream

of the urine. Mr. Coulson objects to the conical and fusiform bougie, and prefers the cylindrical. He proceeds:

The word dilatation has been applied to the mode of treatment of which we now speak; but it does not accurately describe the effects produced, or intended to be produced, by the passage of instruments through a contracted portion of the urethra. You must remember what I have said relative to the organic changes which accompany permanent stricture. The canal is not simply diminished at a particular point by muscular contraction; if this were the case, dilatation, properly so-called, might be expected to effect a cure in a speedy manner, but the effect cannot be regarded as purely mechanical. The passage of the instrument modifies the vital properties of the part, while the pressure which it exercises on the newly-organized products of inflammation induces a tendency to absorption, and gives a stimulus which enables nature to complete the cure. The vital effects of the bougie, if I may so call them, are in fact visible from the commencement of the treatment. They often excite pain, or some hemorrhage which relieves congestion, and almost always produce more or less secretion from the mucous membrane of the urethra, which in many cases amounts to an actual running. Besides this, we know that a slight degree of pressure is sufficient to cause absorption of newly-organized parts, and that the absorption, once commenced, goes on even when the pressure has been removed. But whatever the theory may be, the results of the practice are certain; and long experience has demonstrated that, with certain exceptions, dilatation is the most safe and effectual method of relieving the distressing accidents which attend stricture of the urethra. It is not to be indiscriminately used; for there are many cases of old stricture in which it will assuredly fail, nor is the mode of dilatation a matter of indifference. Let me explain what I mean by the mode of dilating. This may be conducted on different principles. The dilatation may be temporary or it may be permanent, and again, temporary dilatation may be had recourse to in a gradual or in a rapid manner. Let me first describe the operative proceedings in each of these methods, after which I will consider their relative advantages, the cases to which they are applicable, and in general the advantages and disadvantages of the treatment of stricture by dilatation.

The size of the instrument, whether it be a plaster bougie or a metallic sound, must be regarded by the presumed diameter and nature of the contraction. Having introduced it in the manner described, it is to be allowed to remain in the canal for a certain time, then withdrawn and reintroduced at stated intervals—points which must be regulated by the circumstances of each case. The object is to effect a regular and progressive dilatation of the strictured part without inflicting any injury on the tissues, or exciting any severe degree of irritation in the urethra. On the first introduction of the instrument, it ought not to remain more than a few minutes in the urethra; if it has been borne well, it may be introduced again on the following day, and so on; but the best practice is to pass the bougie every third day only at first, and then to increase in a gradual manner the size of the instrument, while the intervals between each operation are shortened. All this, however, and the time during which the instrument is allowed to remain in the urethra will be regulated according to the effects produced on the stream of the urine, which indicate the changes gradually taking place in the calibre of the urethra, and its return to a healthy condition. It is not pretended that the diameter of the canal is always to be brought back by dilatation to its normal extent; but when the patient is able to pass his urine freely, when the urine is healthy, and when no tendency to a return of the contracted state manifests itself, then you may consider the patient cured, and cease the use of instruments. In ordinary cases this will require from a month to six weeks, perhaps longer.

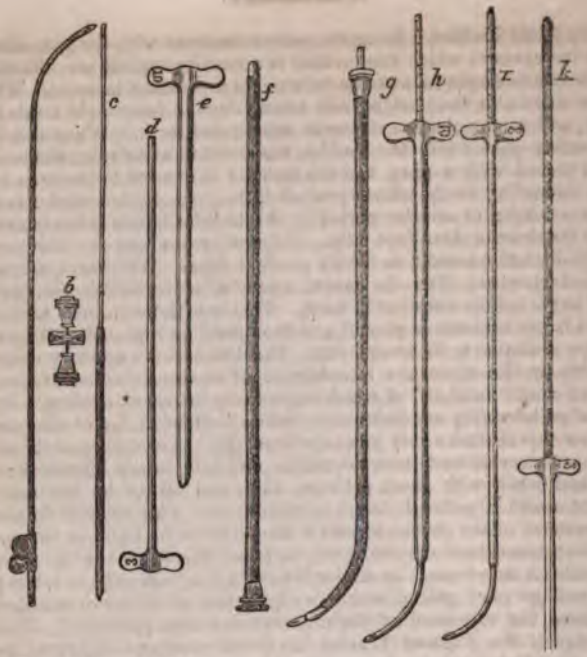
Though safe and certain, this is a very tedious method, and hence many surgeons have attempted to abridge the duration of the treatment by effecting dilatation of the canal in a more rapid manner. This is done by introducing at first a small instrument in the usual way, then withdrawing it, and passing in quick succession two or three instruments of larger size, until the patient begins to complain of uneasiness or pain. The same operation is repeated in a day or two, higher members being gradually employed, and in this way very obstinate strictures have been cured in five or six days.

Permanent dilatation, as its name implies, is effected by leaving the instrument

permanently in the bladder. Some surgeons commence with the gum-elastic catheter, but as the cases to which this method is generally applied are difficult, I believe it will be better to employ a metallic instrument in the first instance. This may be allowed to remain in the bladder from twenty-four to forty-eight hours; it is then withdrawn, and a gum-elastic catheter is substituted for it. When this instrument has been safely passed into the bladder, the stylet is withdrawn, the mouth of the instrument closed with a plug, and the catheter is secured in its place by a proper bandage. According to the effects produced, the gum-elastic catheter is allowed to remain for a longer or shorter period in the bladder before it is removed. Some leave it in for three or four days only. Other surgeons who fear the consequences of too rapid dilatation leave it in for six or eight days. Whichever course you may pursue, the instrument, after the period selected, is withdrawn for twelve hours, and one of larger calibre substituted for it. This is withdrawn in its turn after a few days, a still larger catheter employed, and the operation repeated until the calibre of the stricture is dilated to its natural size. But this and the ordinary modes of dilating strictures by the successive introduction of instruments, the calibre, or to use the technical word "number," of which is gradually increased, obviously involves the necessity of withdrawing one instrument before another of larger size can be introduced. Now this is often a very great disadvantage. In certain cases the surgeon frequently experiences almost insurmountable difficulty in the introduction of an instrument, and when with great patience, skill, and labour he has succeeded, no sooner is the sound introduced than it is withdrawn. This must be frequently done during the course of the treatment, and if the stricture be tight, or any considerable tendency to spasmodic action exist, it may be impossible to pass in the original instrument, much less a larger one. In all our actions it is a great point to retain possession of any advantage once gained, and it is highly important in the treatment of stricture to "keep the command of the urethra when once pervious." To attain this desirable object, Mr. Thomas Wakley has invented several ingenious instruments, the utility of which has been demonstrated by very extensive practical application. Here are Mr. Wakley's instruments, (See '*Braithwaite's Retrospect*,' Vol. xxiii., for a full description of the instruments by Mr. Wakley.) They are intended to ensure, as I have said, entire command over the pervious urethra; and they present this additional novelty, that in their effects they combine two methods of treatment commonly employed—viz., rapid and permanent dilatation of the stricture.

Mr. Wakley's instruments are simple, and easily understood. They consist of a small silver catheter No. 2, of the ordinary size, which is introduced into the bladder with the usual precautions. A steel index-rod is then screwed on the end of the catheter, and the combined instrument forms what Mr. Wakley calls his "index-rod," which serves as a director for the silver and elastic tubes. The silver tubes are eight in number, of graduated sizes, corresponding to the ordinary bougie. They are about nine inches long, straight, of a conical shape at their distal extremities, and accurately fitted to the surface of the index-rod, along which they glide with perfect ease. The elastic tubes are composed of a flexible metal, covered with a gum-elastic fabric. They are of the same size and shape as the silver tubes, and are passed into the bladder over the directing-catheter, which is then withdrawn. When it is necessary to repeat the dilatation, the index-rod is passed into the bladder through the elastic tube, which is then withdrawn, and the silver tubes introduced along the guide in the manner already noticed.

From this brief description you will perceive that permanent dilatation is effected by means of the flexible catheter; while the different sizes of the metal tubes, which are safely guided along the index-rod, enable the surgeon to regulate the degree and rapidity of dilatation according as he may think judicious. From the cases published by Mr. T. Wakley, it would appear that he sometimes introduced his metallic tubes rapidly one after the other up to No. 7, and that he is not in the habit of leaving the elastic tube, on the first introduction, for more than half an hour or so in the bladder. Those who are acquainted with the difficulties which often beset the surgeon during the treatment of stricture must confess that the principle on which Mr. Wakley's instruments act is one of deep importance, and that great credit is due to him for the ingenious and perfect manner in which he has attained the desired object. Mr. Wakley has now treated a very great number of cases of stricture with his instruments, and he states that the results have been



(*a.*) The catheter and thumb-slide.
(*b.*) The thumb-slide.
(*c.*) The steel-rod. The rod and catheter combined make the index-rod.
(*d & e.*) The silver tubes.
(*f.*) The elastic tube.
(*g.*) The elastic tube running over the directing-catheter.
(*h & i.*) Silver tubes running over the director.
(*k.*) The upper part of *h & i*,—the steel-rod.

of the most gratifying description. That the guide-tube must greatly facilitate the introduction of dilating instruments, I have no doubt; but I am not quite so certain that the necessity of always keeping an instrument in the bladder may not occasionally give rise to unpleasant effects.

It may now be useful to say a few words on the kind of cases to which the treatment by dilatation is more particularly applicable. Temporary dilatation is not only the oldest, but the best of all methods; it is likewise the one most generally employed; yet it were absurd, in my opinion, to assert that it should be applied indiscriminately in all cases and to every species of stricture. It is well suited for recent cases not accompanied by considerable change of structure, and also for those in which more rapid dilatation produces unfavourable symptoms. Many cases of old and hard stricture will also yield to the metallic sound, whereas the bougie produces little or no effect on them. Rapid dilatation may be attempted in cases where the stricture yields readily, or when it is a matter of great consequence to the patient to obtain a speedy cure. But although it is certain that rapid and effectual cures have been obtained by quickly increasing the size of the instruments employed, and by introducing them in quick succession, yet I cannot too strongly caution you on the necessity of prudence whenever this method is adopted, and of watching the case with the utmost care during the whole period of treatment. The urethra often resents these attempts to dilate it in a hasty manner, and a very slight increase in the size of the instrument may cause a reaction, which will continue with obstinacy until we cease the use of instruments altogether. This is seen every day in practice, and surgeons are well aware that any imprudent attempt at forcible dilatation may be followed by severe inflammation of the urethra, or perhaps retention of urine, with fever, nervous symptoms, and other disagreeable consequences.

Permanent dilatation is a very efficient method in most cases of bad stricture, where the urethra is dense and resisting, or the canal rendered tortuous by chronic inflammation. It should also be preferred in those anomalous cases where the contact of an instrument with the neck of the bladder produces on each occasion severe shiverings and nervous disturbance of a serious character. On the other hand, there are undoubtedly cases which will not yield to any form of dilatation, but are rather aggravated by it; there are some in which dilatation is plainly contra-indicated; there are some in which no rational hope can exist of our being able to relieve, much less cure the disease by bougies or sounds. I have, however, fully considered these points in a former lecture, and I shall now conclude with some remarks on the advantages and disadvantages of dilatation.

Although this method of treatment has stood the test of time—and this is a strong presumption in its favour—many objections have been advanced against it. In the first place it has been objected that there are strictures through which a bougie cannot be passed. This is perfectly true; I cannot concur in the opinion that no such thing as an impermeable stricture exists; still I believe that with caution and perseverance an instrument can almost always be passed. There are, however, strictures which cannot be overcome without the certainty of making a false passage; here dilatation should not be employed, and such cases necessarily limit its field of application. To dilatation it is also objected that the surgeon can never be sure of being able to re-introduce any instrument after it has been once withdrawn. This is also true, but the disadvantage has been remedied by the excellent instruments of Mr. Thomas Wakley, of which I have already spoken. Dilatation sometimes produces inflammatory and nervous accidents of a disagreeable nature. This cannot be denied; but I maintain that it is much less likely to excite such disorders than any other mode of treatment, and that the objection holds good against rapid, not against gradual and methodic dilatation of the urethra. The treatment by dilatation is inapplicable to cases of old, callous, or very contractile stricture. This I admit, and would reserve such cases for other modes of treatment. The process is a long and tedious one, and the necessity of confinement or repose is a great inconvenience. Temporary dilatation unquestionably is a slow process; but if it be slow it is safe, and probably as sure as any other method. Unless the case be a severe one, no great repose is necessary, for every surgeon in extensive practice knows that the great majority of his cases of stricture are in persons who follow their usual avocations. Finally, it has been urged that the cure by dilatation is only palliative; the contraction has been removed for a time; it soon returns. This objection, I fear, will equally apply to any other method which may be employed. After the cure of stricture, whether by bougies, caustics, or incisions, a certain tendency to contraction often remains, and it will always be prudent to continue the occasional use of an instrument long after the disease has been apparently cured. This is an imperfection attached to every method hitherto adopted, and I cannot perceive that it affects dilatation more than any other.

The advantages of dilatation, if we admit its efficacy, are obvious. It is safe, painless, and easily managed, being under the control of the operator, and capable of being suspended at any given moment, should unfavourable symptoms set in. By temporary dilatation we avoid the danger of making false passages, or producing retention of urine—accidents which so often follow the use of caustics, or permanent dilatation. The vital contractility of the urethra is better restored by this method than by any other, and it possesses the great advantage of enabling us to ascertain step by step the progress which is being made towards a cure.—*Lancet, Dec.* 24, 1853, *p.* 593.

120.—NATURE AND TREATMENT OF SPERMATORRHŒA.

By John L. Milton, Esq.

Spermatorrhœa admits of a very natural division into—1. Night Discharges; 2. Day and Night Discharges; and 3. Imperfect Secretion of Semen.

1. *Night Discharges.*—These constitute the mildest form of the complaint, and are, as is well known, a common result of seminal plethora; they seldom require much treatment, unless in excess, or when complicated with gleet, stricture, or discharges in the day-time.

2. *Night and Day Discharges*—a more advanced grade, and in their worst form often bordering on the third class. The urethra is then red and highly irritable, and the health severely impaired; but happily for the patient both varieties are for the most part easily curable.

3. *Imperfect Secretion of Semen*—the most severe of all, and necessarily accompanied by temporary impotence. Instead of properly eliminated, healthy, consistent semen, a thin, rank fluid, unaccompanied by almost any signs of erection of the penis, is thrown off under the influence of the slightest excitement. Intense irritability of the urethra, and a marked dread of examination, usually complicate this form.

There is a variety of the disease which is generally considered as spermatorrhœa, and with which most surgeons are familiar. I mean the discharge after stool of large quantities of glairy, tenacious fluid, supposed to be the contents of the seminal vesicles. Now, I very much doubt if this be an evacuation of semen; great part of it, I suspect, comes from the prostate; and in my work on Gonorrhœa (p. 101), I adverted to the cure of a case of this kind as being probably an instance of prostatic gleet. Even if it comes from the seminal vesicles, which from the quantity emitted seems almost impossible, I should scarcely be disposed to admit it to be a discharge of semen, for I have not been able to satisfy myself that these receptacles receive the superabundant secretions of the testicle; but whatever it be, it demands our urgent attention, in order as well to allay the patient's uneasiness about so disagreeable a symptom, as also to leave no chance for the germs of any disease to ripen.

Complications.—It is almost superfluous to say, that all complications require immediate removal. Gonorrhœa and stricture have their appropriate remedies, upon which I shall not touch. It has, however, been asserted that spermatorrhœa may depend upon fissures in the anus, ascarides, &c. To which I reply, that I have strong doubts about the fact; but as these causes would require removing for their own sake, it is obvious that the treatment must be much the same. I must, however, demur to M. Lallemand's plan of excising the prepuce in every case where accumulations of sebaceous matter behind it coincide with spermatorrhœa. Where there is also contraction of the prepuce, so that the glans cannot be uncovered without pain; or where a firm, constricting ring has formed underneath the mucous membrane, I grant that the remedy is circumcision; but where the prepuce passes freely over the glans, plenty of soap and water every morning, and the use of zinc or tannin, in the form of a lotion, will almost always effect a cure.

When circumcision is imperatively called for I have found it best to slit up the skin and mucous membrane to the reflection of the latter, and then to cut away the frænum as far as I could. The constricted part, which is mostly near the edge, is removed in a circle, and the bleeding being stopped, the skin and mucous membrane are brought together by several fine stitches, and the intervening spaces may be covered with collodion. Of all the operations I have seen this leaves the neatest prepuce.

1. *Treatment of Night Discharges.*—Even in cases where it might be supposed, from the healthy frame of the patient, that tonics are not called for, it will often be found that quinine will stop these discharges. Hunter says, "the idea that has been formed of the disease leads to the practice generally recommended, such as giving strengthening medicines of all kinds, but I never saw any good effects from any of them, and I should rather be inclined to take up the soothing plan to prevent all violent actions, and keeping the body open will in some degree moderate the discharge, and may probably effect a cure in the end."—(On the Venereal, p. 304.)

Yet there can be little doubt, I think, in the minds of those who have given it a fair trial, that quinine does assist powerfully in controlling spermatorrhœa, especially in those cases where physical weakness is the predominant symptom. I willingly admit that in others its good effects are not so marked; that where the tongue is foul, and there is a good deal of irritability, headache, and dyspepsia, with costiveness, it is more necessary to subdue these symptoms by mild aperients, sedatives, &c., than to give any tonic, however useful in other conditions. M. Lallemand has urged against it, that it produces considerable irritation, but I apprehend this mostly arises either from unsuitable cases being chosen, or from giving too large doses.

When violent or painful erections arise from the irritation occasioned by the presence of, or remaining after, gonorrhœa, the spirit of camphor will generally at once

relieve them. A teaspoonful in a little water is the dose. The patient should place all his apparatus in readiness by his bed-side, and as soon as he is awakened by an erection he should rise and take a dose. If the erections come on as soon as he lies down, he had better take a dose before going to bed.

Few means of controlling spermatorrhœa could be devised so simple and natural as exercise, especially gymnastics, which the common experience of mankind has extolled from the most distant times. Every abnormal action is marked by a failure of vital power at one or more parts of the frame, and an accumulation of it in the suffering organs. The generative power, animal life, and cerebral development, antagonize each other; and sedulous attention to train the two latter to the highest degree of activity they are capable of, will rarely fail to subdue anything short of excessive action in the generative system, and bring the performance of this valuable function under the mild and healthful sway of reason.

True physiology will always conduct us to the same goal as experience founded on correct observation. Hence every writer who has attentively watched this disease has strenuously insisted on the necessity for gymnastic exercise. But owing to the iniquitously late hours kept up in many London houses, it is impossible to resort to this remedy. It is useless to talk of the advantages of boating, cricketing, &c., to young men pent up in shops and warehouses till ten or eleven o'clock at night. Thus, like the baths, douches, mattrasses, &c., which are recommended, they are liable to one grave objection, that of being inapplicable in nine cases out of ten, and to make true progress in treatment our main object must be to find out remedies *suitable for every case.*

Accordingly, I have long accustomed myself to rely principally on morning exercise, as the question then becomes one rather of conformity than of ability on the patient's part, and if he be really determined to save himself from the results of his own indiscretion he may do half the surgeon's work if he will rise at five or six o'clock, sponge with cold salt water, use the dumb bells for half an hour, and follow this up with a brisk walk. It will not be long before the eye grows brighter, and the skin clearer; before he sleeps sounder and again feels comfort in existence.

Dr. Carpenter recommends his readers as a preventive to try the effects of close mental application. The frantic acts of self-mutilation performed by devotees show that the most absorbing study will not suffice to quench entirely a natural passion. But this is not the only objection to the plan. In the greater number of bad cases, I believe it is useless to inculcate study; the depression and irritation are too great to allow the attempt to succeed, and with all the good will possible, most of these patients cannot make a beginning till their physical condition is somewhat improved. I therefore advise those who have time to spare, to begin study by reading *aloud* for an hour every night, and then to go out as much as they can into society—a plan from which I have seen better results than from attempting to impose on an exhausted brain a task it cannot possibly execute.

But should all this fail to remove the disease—should it persist from habit, as it is called, but which is nothing more than the result of our inability to cope with the diseased action, perhaps no remedy will act more quickly and surely than a blister. Notwithstanding the strong opinion M. Lallemand has pronounced on the subject, I have no hesitation in asserting, after the numerous trials I have given it, that if some proper medium, as blistering tissue, &c., be used, no strangury or "exasperation effrayante" of the spermatorrhœa need ever be feared.

2. *Night and Day Discharges.*—Here we have rather a more serious affair to deal with, though the greater part even of these more severe cases will yield to persevering use of the remedies already spoken of. Where, however, these are inapplicable, as, for instance, in cases complicated with severe indigestion, or a high degree of nervous excitement, with severe pain in the urethra, or excessive sensibility in this canal, or when imperfect secretion of semen has begun to show itself, we must have recourse to further means.

Among these we may safely rank *opium.* Under its use the secretions become thicker, and less pain is occasioned by their being thrown off, as if at one and the same time it blunted the sensibility and checked the secretion of the watery and irritating elements. And besides all this, it is not too much to say, that opium is a tonic both to the exhausted frame and irritated mind. Where there is a frequent desire to pass urine, and in cases marked by excessive watery secretions from the

Schneiderian membrane, aggravated by cold easterly winds, opium often effects a most beneficial change.

It may be objected that it tends to produce constipation, destroy the appetite, and favour congestion of the brain; but the two latter seldom if ever result when it is used, as it requires to be, in moderation, and at intervals. The constipation also is not an unmixed evil, for in some of these cases there is a considerable irritability of the rectum.

In this variety of spermatorrhœa also, few patients are met with who are not benefited at some period by the treatment of quinine. Where the patient is very pale and nervous, and where there is any tendency to spasmodic stricture, the tincture of muriate of iron may be given, and so far as I can judge, this, and some of the chalybeate waters, are the only forms in which steel is, if not injurious, at least not useless.

In some cases the patient complains of a foul tongue, and thirst, with nausea and lassitude; the urine is turbid, and the stomach disordered; or the stools occasion smarting and heat at the anus. Sometimes he is harassed by a cough, and a good deal of mucus is expectorated. These symptoms indicate a disordered state, which is often instrumental in keeping up the spermatorrhœa, without having been perhaps the primary cause. In such cases I have used the nitrate of potass with success.

After the statements M. Lallemand has made respecting this salt, I could not well pass over his views. He says that nearly all those who took squill, nitrate of potass and digitalis, observed a marked exacerbation of the seminal discharges (*une augmentation notable des pertes séminales*), and that the nitrate proved injurious in every instance—an opinion founded upon forty cases, he says, some of which were certainly lamentable enough.

But to what was this due? M. Lallemand has left us perfectly in the dark as to the dose, the most important point of all. In one case only can we arrive at any estimate, and here we are briefly informed that an ounce was taken in three days. No one who has seen the irritability of the bladder and kidneys produced by nitrate of potash, or any strong diuretic salt, in gonorrhœa, will be much surprised to learn that such needless overdosing brought on a "notable augmentation" of the symptoms.

When the constipation is much complained of, and the patient has in vain taken large quantities of medicine to overcome it, I would venture to advise the surgeon to desist from any attempts to remove it by drastic purgatives, &c. Not that I at all deny the injurious effects of costiveness, if not on the health, at least on the mind of the patient, whose anxiety is always kept alive so long as this costiveness is followed by a mucous discharge, but that I think the irritation and exhaustion occasioned by repeated purging are even more injurious, and that we may effect the same purpose by less hurtful means.

The remedies I have to suggest may not perhaps meet with the approbation of my readers. I generally trust a good deal to time and improvement of health, or, when the costiveness is very obstinate, recommend the patient to take a pill of gentian and a small quantity, as the one-twelfth of a grain, of strychnia, with a tumbler of unsweetened gin and hot water at night, and one of cold water in the morning. Even when the constipation has become so extreme that the patient has not a stool more than once in nine or ten days, a little perseverance in this plan has soon restored the functions of the intestines.

Nitric or nitro-muriatic acid may be given when there is much irritability of the bladder or scalding. If the patient complains of spasmodic pain at the neck of the bladder, and we find the urine loaded with lithates or clouded with mucus, these acids, along with laudanum, may be exhibited in decoction of pareira brava or chimaphila. Occasionally he describes an annoying pain at the epididymis, which sometimes shifts to the vicinity of the prostate, or he is tormented by a sensation like that of a worm creeping along the urethra or vas deferens. Sometimes the uneasiness is indefinable, but not the less disagreeable. Strong veratria ointment, or some mild counter-irritant, will generally succeed in subduing these symptoms, which, however, now and then linger on for a long time.

The high reputation which M. Lallemand most deservedly gained by his work on spermatorrhœa, and the writings of Mr. Phillips and Mr. Curling, have attached to the "caustic holder" an amount of prestige, which, however well merited, has, I think, had the effect of retarding improvement in the treatment of this disease by

other means. So far from denying that it is both a safe and a valuable remedy, I never hesitate in certain cases to avail myself of it; what I object to is, that so many surgeons look to it as *the remedy*, while, in truth, it is not very often called for. It has been engraved, described, and commented upon, till an impression has arisen that it is an unfailing but very formidable remedy, whereas it has not only occasionally failed in the hands of Phillips, Curling, Acton, and others, but also in those of its great inventor. "Cauterization," says M. Lallemand, "is most useful in spermatorrhœa from menorrhagia, venereal or non-venereal, and often useful in atony; it is not of much value in cases of irritation, but even here it may aid by modifying the tissues." Mr. Phillips, in the answers he was kind enough to send to some queries I laid before him, says that "it has not only often failed to effect a cure, but even to relieve spermatorrhœa;" and Mr. Curling, in a communication he favoured me with, says, "Cauterization is not an infallible remedy. Some cases are too aggravated or too well established readily to admit of cure by any treatment. Many circumstances tend to counteract the beneficial effects of the caustic, such as want of self-control to check bad habits and the thoughts dwelling on impure subjects, occupations and modes of living detrimental to health, &c." But again he says, "cauterization has rarely failed to give more or less relief."

Of its safety there can be no doubt when it is properly employed. Lallemand used it for twenty years, and even cauterized the lower part of the bladder, without any untoward result; and Mr. Acton, commenting upon this statement, says he can fully bear it out. Mr. Curling says, "in no instance has any harm resulted from the application of the caustic;" and Mr. Phillips, in one of his answers to me, says it has never produced injurious results in his hands, though his experience extends over many hundred cases.

We might suppose that some part of this was owing to the excellent surgery of those who employed it. M. Lallemand does not allow the caustic to remain an instant longer in contact than is absolutely necessary. "I cannot," he says, "protest too strongly against those who give a fixed period (une durée quelconque) for the action of the caustic, and measure it off by the watch. *Even to look at the dial takes too long a time.*" And Mr. Curling attributes the absence of severe symptoms in the cases where he has used it to his having applied it still more gently. But Mr. Phillips, though he has seen some discomfort caused by it, has rarely heard of any complaint on the patient's part; the pain on passing the urine is "very bearable," although he uses the caustic *very freely*. "I have never applied," he says, "too much caustic, but I have more than once failed by using too little." Had any severe symptoms occurred, Mr. Phillips would, we may rest assured, neither have overlooked nor suppressed the mention of them. All that is left us is frankly to admit that in his cases no harm resulted from the application of the caustic. M. Lallemand, however, has seen severe retention of urine, hemorrhage, intense pains, which only yielded after a long time, and it seems that stricture has also followed. I have myself seen cases where intense and long-continued suffering ensued, without any amendment in the patient's condition.

Want of success in some cases, the urgent objections raised by some patients to the introduction of instruments, and the decided benefit which has followed from an opposite plan, have induced me to think that it is better, first by every means in our power, to strengthen the frame, and diminish all local and general irritability before resorting to the use of caustic.

A large opium plaster to the loins will generally allay the aching pain so much complained of; I have often added a scruple of camphor to the plaster, without being able to give any good reason for so doing beyond the beneficial effect which resulted from it.

The chief remedy in cases complicated with gleet, severe pain, and purulent discharge from the posterior part of the urethra, and when cauterization has failed, is blistering, which is even more called for than in the other forms of the disease. It very frequently not only relieves the seminal discharges, but it relieves the cause, and I know of no other remedy which does both at the same time.

In every diseased action there appears to be increased vital action at the parts attacked; and as all the functions demand the presence of a certain amount of vital power for their due performance, there is a constant tendency to restore the balance deranged by disease. In chronic disorder the strain on the economy seems too

slight to rouse up any violent action in the other parts, and we can only effect a cure by irritants, which carry the vital action so high, that when the rebound takes place it reverts to the normal state; like a bent spring, which, when bent still further, straightens itself by the recoil.

Along with blistering I have sometimes used injections of nitrate of silver to any part of the urethra which seemed diseased, employing a syringe with a button at either end of the part perforated for the passage of the injections. By this means the urethra is kept sufficiently on the stretch to admit of the injection penetrating into every nook of the diseased part, while the buttons prevent its escape. The injection ought to be allowed to remain in contact till the nitrate is decomposed, so that the anterior part of the urethra may not be affected by it.

The highly sensitive state of the urethra, which makes these patients shrink instinctively from the approach of an instrument, appears to be caused by, not to be the cause of spermatorrhœa; and Dr. Tyler Smith has given us a satisfactory reason why the frequent presence of a crude fluid in a canal, which nature only intended to traverse it occasionally and in a consistent state, produces inflammation. Those who upheld an opposite view thought to find a convincing argument in the results which follow cauterization; but one gentleman who was appealed to proved rather too much, for, finding his patients suffer severely from cauterization, he gave them injections of nitrate of silver to use, which also cured them; and "a well-known and experienced Scottish surgeon observed that, when cauterization of the urethra failed, he had applied the *cautery* to the external orifice of the urethra *with more decided advantage*."

I presume the truth is, that the source of suffering is the irritation set up in the testicles, and that any active and wholesome counter-irritant, applied sufficiently near, will allay or even cure it, upon which the redness and tenderness of the urethra will soon subside. However, the caustic is often of great service in these cases, for such patients *will* bungle with every remedy put into their hands, as though they derived gratification from thus giving evidence of the miserable state to which they are reduced. With the application of the caustic they have nothing to do; it is sufficiently powerful to keep the fingers quiet for a little time, and in cases complicated with gleet arising from the "granular urethra," it seems almost indispensable.

Instead of Lallemand's instrument, I very often make use of one I had constructed for the purpose. It consists of a platinum canula and a stilet. The instrument is passed down to the diseased part, and the stilet being withdrawn, a small flexible bougie is introduced armed in the following way: the tip being scraped so as to make it rough, it is dipped in fused caustic, and then in melted tallow; by this means a thin film of caustic is secured, which acts on every part, without the risk of excessive cauterization at any one point.

In all forms of spermatorrhœa, the food ought to be as plain but as nourishing as it can be procured; no pastry, pickles, or beer ought to be admitted into it, but *plenty of meat* and potatoes, or bread, for dinner, with a little tea or coffee morning and evening; if possible, meat twice a day. The worst cases have always seemed to be more benefited by a full meat diet than by any medicines; and it is not uncommon to find that a patient has grown worse in every symptom in proportion as he has become a more thorough vegetarian. The further south we go, the more do we find a vegetable diet supplanting the animal food of northern nations, and the more prominent a place does spermatorrhœa assume in the catalogue of diseases. Difference of race I shall be told is sufficient to account for this: the Spaniard and the Moor are by nature more ardent than the Esquimaux; the Persian and the Arab than the Livonian. True, but not therefore by nature more prone to spermatorrhœa; it is, that, degenerating by civilization, they fly more readily to that kind of diet and to those habits which produce spermatorrhœa. From what I have been told of those going to hotter climates, and using the diet prevailing there, it is so invariably to aggravate the symptoms, that it seems only reasonable to infer, that in men living altogether in an abnormal condition, habit, climate, and diet will approximate the diseased states of individuals, though possessed of no power to influence the original state of each recurring generation.

But while I strongly urge the use of plenty of meat, I exclude none of the four varieties of nutriment; and I say this advisedly, for I have seen some of the most obstinate cases of spermatorrhœa in ascetic patients, who religiously excluded

sometimes all oily, sometimes all sugary matters, and thus appeared to give full swing to the oxalic acid diathesis with which many of them were afflicted.

[Imperfect secretion, and hence impotence, may arise from two causes,—internal weakness or excessive irritation set up in the testes. Where imperfect secretion or true spermatorrhœa follows youthful excesses, we may promise a cure, although there may be alarming symptoms, as, breathlessness, wasting, with loss of strength and spirits, if neither phthisis nor organic change in the nervous centres have taken place. Mr. MILTON draws attention towards a few points as regards the treatment.]

1. The indigestion which accompanies many of these cases is often best relieved by the use of aromatic confection in combination with sulphite of soda and mint-water. Of the way in which it acts I do not profess to offer any explanation; I limit myself expressly to stating the results of my experience.

2. Where practicable, I would advise a gradual transition to the diet on which prizefighters are put when in training. A milk diet has been recommended on good authority, but it soon becomes insupportable; it often causes a most uncomfortable state of detension; and finally I have no great faith in its good effects. Whatever plan the surgeon resorts to, he will have to persevere with, for many of these patients have an objection ready so soon as anything is proposed.

3. I think it is imperatively necessary to attempt, by every means in our power, as blisters, *occasional* injections, &c., to diminish the sensitiveness of the urethra before resorting to the caustic or even the bougie. We thus not only secure a great number of patients, whom the dread of some operation of this kind drives to the quack, but we materially lessen their sufferings without really losing time.

Spermatorrhœa, as a complication of congenital imperfect erection, is a more rare and formidable matter. Both, singly, are common enough, but they are often seen together. In the cases I have met with there was generally extreme derangement of the assimilative and digestive processes; the urine contained oxalates; a faulty state pervaded the organs of the senses, &c. I need scarcely say that it is necessary to draw a wide line of distinction in treatment between *congenital* and occasional imperfect erections, both of which may co-exist with an otherwise healthy system.

Sufficient materials do not appear to have been accumulated to found any comprehensive plan of treatment for cases belonging to this subdivision, but, except in rare instances, they do not present any insurmountable difficulties, unless the imperfect erections are congenital, and combined with an otherwise faulty development.

I shall now, in conclusion, offer a few cases to illustrate the most salient points in the treatment I have ventured to bring forward. I have simply used a series of initial letters in compliance with what appeared to be a general wish on the part of the patients.

Case 1. *Night Discharges from Masturbation.*—A., a good looking lad, aged 17, applied Jan. 20, 1851, with spermatorrhœa, arising from masturbation, which he was continually performing in his sleep. To use an ointment of deuto-iodide of mercury, sufficiently strong to occasion vesication, and have a mild aperient. A few days subsequently tonics were begun with, and he was soon well.

Case 2. *Night Discharges from Gonorrhœa.*—Mr. B. applied Feb. 12, 1850, with severe seminal emissions, apparently arising from gonorrhœa, under which he had been labouring. A surgeon to whom he had previously applied, wished to apply the caustic, to which he objected. He complained of constipation, but otherwise enjoyed good health, and though pale, he was strongly formed. A grain of quinine with ten minims of dilute sulphuric acid, and a drachm of sulphate of magnesia twice a day; a small blister to the perineum.

14. He has not been able to apply the blister. To do so now, and continue the mixture.

March 7. Improving. To continue the mixture, and dress the blistered surface with zinc ointment.

April 11. He has no emissions lately. To apply another blister, and continue the mixture. He had no more emissions, as I subsequently learned from him.

Case 3. *Prostatic Gleet.*—C. applied March 5, 1850, for the treatment of a discharge of thick mucus, like the unboiled white of an egg, after going to stool. It arose from a gonorrhœa, *he thought*, which had yielded to a tedious treatment extending over twelve months; among other remedies he had used salines and in

jections. On crossing his legs, pain was felt in the vicinity of the prostate. Copaiba and turpentine were tried in vain; mercury with chalk and rhubarb were then given, and a blister was applied to the perineum, which rose freely. The nitric acid and decoction of pareira brava were subsequently administered, but as the discharge was not quite gone by the 20th of the ensuing month, he was ordered a second blister, which completely cured him.

Case 4. *Night Discharges with Prostatic Gleet.*—Mr. D. applied March, 1849, with these affections. He had been addicted to great venereal excesses, and some time previously, while in a bad state of health, had contracted syphilis, for which he had taken so much mercury that his health had suffered severely. There was a constant discharge after stool, and sometimes after passing urine, of tenacious, glairy mucus, and he suffered greatly from night pollutions. In the left groin was a hard mass, apparently swollen glands and cellular tissue. To this a large blister was applied, and for three weeks not a single discharge was noticed; they subsequently reappeared to a slight extent, but were removed in a few weeks by quinine and exercise.

Case 5. *Night Discharges, Recurrent Gleet, and Prostatic Gleet.*—M. E. applied to me July 18, 1853, with the following symptoms:—He suffered from periodical attacks of great excitement, indigestion, and constipation; a free purulent discharge from the urethra and glans then set in, followed by several emissions, after which all the worst symptoms subsided; occasionally a mass of mucus was thrown out after going to stool. He had been addicted to masturbation, and had then caught a gonorrhœa, which made him worse. Having relieved the indigestion and costiveness, and got him into habits of morning exercise, I injected the urethra with the perforated syringe, and then applied the nitrate of silver with my own instrument; still the urethral gleet continued, and he had occasionally an evacuation of mucus after a stool. A blister was therefore applied to the penis, and in this case, also, there was not a single discharge for three weeks after; quinine was used and a cure speedily followed.

Case 6. *Night Discharges and Stricture.*—F., aged 22, applied Aug. 15, 1853, with seminal emissions, which occurred every night, and had now lasted, he said, seven years. He looked pale and shattered, and had been recently under the care of a surgeon, who had used the bougie, and materially relieved him. A slight stricture was now detected, which the bougie soon removed. Salines, containing nitrate of potass, were given, and these, with quinine, and mustard poultices to the perineum, effected a comparative cure to his previous state.

Case 7. *Night and Day Discharges, with accumulation of Sebaceous Matter.*—G., a stout healthy young man, applied, June 18, 1853, with seminal emissions, occurring two or three times a day, exclusive of those at night; they appeared to have resulted from gonorrhœa and a very unhealthy employment; never guilty of masturbation. Ordered, quinine twice a day; exercise and cold sponging.

25. He is much better; there is some sebaceous matter about the neck of the glans. To wash this well with soap-and-water, and afterwards apply a zinc lotion; the mixture to be continued.

30. He is just well, and has only had three seminal emissions the last week. He has removed all the sebaceous matter, and the prepuce is seen to be very red inside. To continue. As complete a cure ensued as ever does in these cases, a seminal emission at night occurring from time to time.

Case 8. *Night and Day Discharges.*—H., a pale, delicate young man, applied, June 25, 1853, with gleet and seminal emissions, occasionally in the day, but mostly at night. He complained of great weakness, pain in the back, and cough. An opium plaster to the loins, quinine twice a day, meat diet, and volatile liniment to rub on the chest; morning exercise. During the latter part of July he had a few days' sea-bathing, which did him a great deal of good; the opium plaster relieved the pain in the back, and was accordingly repeated as soon as it fell off. By the 12th of September he was so far improved that he had had no seminal discharges for three weeks; but the gleet grew so much worse, that I was obliged to order him injections. Having left off his medicines, he had a slight relapse, but on resuming them, was rapidly cured of all but an occasional discharge at night.

Case 9. *Day Discharges.*—Mr. J. applied, November, 1852. He had two to six times a day faint erections, and immediately after a thin discharge. The urethra

was red, and there was a strong smell from the glans. He was pale, nervous, and so weak, that he thought he could not live, and he was tormented by a constant cough, with indigestion and costiveness. Salines, containing a little syrup of red poppies, and five grains of nitrate of potass, three times a day; mustard poultices to the perineum; veratria ointment to the testicles. Soon after quinine was commenced. He gradually recovered, and at the end of ten weeks was so far advanced towards a cure that he gave himself no further trouble about the matter.

Case 10. *Spermatorrhœa and Congenital Imperfect Erections.*—Mr. J. applied, August 12, 1852. Erections never had taken place, and there was a constant discharge from the urethra, which was in an inflamed state, of rank, thin fluid. He was, and always has been, very weak. Cauterization had been tried, and failed. He was the type of this class of patients. Every secretion and every sense was at fault, as if the whole constitution suffered from the struggle to establish the defective virile power. Blisters, quinine, and nitric acid, &c., were all tried in succession, with little improvement in either the spermatorrhœa or the erections.

Lastly, I would only urge the patient to banish from his mind the idea that a perfect absence of seminal emissions at night is compatible with health and continence. Those who tell him so deceive him, or are deceived; and I cannot conclude better than by quoting a part of Mr. Curling's letter. "I assume," he says, "the cure of spermatorrhœa to mean, not the arrest altogether of involuntary emissions, but the prevention of their frequency to such a degree as to weaken the powers and impair the health."—*Lancet, March* 4 *and* 11, 1854, *pp.* 243, 269.

121.—*Treatment of Congenital Syphilis.*—The continued administration of mercurials to infants is a matter often involving some difficulty. By simply giving the drug to the mother, and trusting to its influence on the mammary secretion, the effect is often not produced with sufficient rapidity; and if the ordinary preparations as hydr. c. cret., &c., be given, they are very apt to produce diarrhœa, and run off by the bowels. To obviate this, we observe that Mr. WORMALD, at St. Bartholomew's Hospital, is in the habit of ordering a piece of flannel smeared with mercurial ointment to be worn constantly over the child's belly, never omitting, however, if the little patient be at the breast, to administer mercury to the mother also. The daily experience of the Skin Hospital proves, that small doses of the bichloride may be given without risk of any evil consequences, even at the most tender age. The dose usually given to an infant of from one to two months is about one nineteenth of a grain in solution three times daily; and it is usually combined with as much of the tincture of opium as may be necessary to relieve the extreme restlessness which often attends the disease. Under this treatment, illustrations of the truth of Abernethy's observation as to "fattening courses of mercury," are often afforded.—*Med. Times and Gazette, Nov.* 12, 1853, *p.* 502.

122.—*Case of considerable Sprouting of Warts on the Glans Penis.* Under the care of HENRY HANCOCK, Esq., at Charing Cross Hospital.—[Ricord believed that warts upon the penis were non-syphilitic, other eminent surgeons think they are; but there can be no question that these excrescences may be implanted on the organs of generation in the same way as they are present upon the fingers. From the narrow space in which they grow, they are liable to produce great irritation and inflammation, and their removal rendered a matter of anxiety. The patient, in the case of Mr. Hancock, was a married man, aged 35, and stated positively that he had never had any venereal affection whatever. He had never noticed anything the matter with the penis until four months before admission, when the warts began to grow.]

The patient has congenital phymosis, and noticed, at the time just mentioned, that some tumour was developing between the glans and the prepuce in the neighbourhood of the corona. The pressure from within soon caused slight pain in the prepuce, and inflammation ensued, marked with a vivid redness on its external surface near the corona glandis. The patient applied poultices; ulceration and per-

foration took place, and the mass of warts, which had been the exciting cause of all these symptoms, protruded through the ulcerated opening in the prepuce.

The verrucæ having thus obtained room, seemed to grow more rapidly than before; the aperture just mentioned became larger, and the warts grew to such an extent as to cover the glans almost completely, and to double its size. The extremity of the prepuce was, in the meanwhile, almost separated by ulceration from the rest of that process, abundant suppuration had set in, and the parts looked, to an unpractised eye, as if the organ had been suffering from carcinoma. Very little or no pain accompanied these changes, and after the poor man had exhausted the means advised by neighbours and friends, which means irritated the parts considerably, he applied for admission at this hospital.

On the 22d of November the patient was brought into the operating theatre, and when he had been rendered insensible with chloroform, Mr. Hancock began to remove, with the scissors, the enormous crop of warts which had sprung up about the part, as also the thickened semi-detached pieces of prepuce which were giving to the organ a misshapen aspect. When the whole mass of verrucæ had been excised, the penis was surrounded with lint dipped in cold water, and the patient placed in bed. The progress has been most satisfactory since the operation, and the parts are now quite cicatrized.—*Lancet, Dec.* 17, 1853, *p.* 576.

AFFECTIONS OF THE SKIN.

123.—ON REVIVAL OF THE ANCIENT TREATMENT OF CALLOUS ULCER BY EXCISION OF THE MARGIN.

By John Hainworth, Esq., late Surgeon to the Lincoln Dispensary and City Gaol.

[In a paper read before the North London Medical Society on this subject, Mr. Hainworth thus describes the disease:]

The apparently sunken, nearly circular or oval, ulcer, varying in diameter from one-third of an inch to three, four, or five inches, having a level, pale-red, glassy surface, void of granulations, excreting a thin, scanty, unirritating fluid, with a hard, precipitous, white or dusky edge, surrounded by integument, thickened and indurated by infiltration of lymph and serum, even now occupies too many a bed in our great hospitals, and too frequently exhausts the patience of sufferer and surgeon, dresser and nurse.

From this description it will be seen, that those ulcers are purposely excluded from consideration which are either inflamed or irritable,—which depend simply on a varicose state of the veins,—which are complicated with diseased bone, or with any special local or constitutional cause.

I have said, "apparently sunken" ulcer, because I hope to satisfy you that it is not really sunken, but that the surface is made to assume that appearance by the elevation of the margin, not by actual loss of substance.

[Mr. Stafford calls this kind of ulcer the "deep and excavated ulcer." Mr. Syme believes that the depression is more apparent than real, the margin being elevated by the effusion of serum and lymph. Mr. Critchett concurs in this view. Mr. Hainworth says,]

That considerable thickening by effusion exists in the surrounding integument is undoubted and unquestionable; but the like effusion will be found present to nearly an equal extent beneath the ulcer itself, forming the firm substratum on which it rests; and if this be the case, we must look elsewhere for the explanation. Here our authorities fail us; for though many surgeons, from the earliest period till at least the close of the last century, directed their remedial measures to the removal of the callous margin, yet I have been unable to find in any writer a description of its actual structure—that is, of the tissue of which it is composed. To this omission may probably be ascribed the disappointment experienced by nearly all who have made essay of the various modes of treatment suggested by numberless surgeons, any or all of which have been most successful in the hands of the proposers. Dr. Adams, of Banchory, justly remarks:—"One cannot but entertain the most painful feelings of distrust in all modes of treatment where one cannot recognise some reasonable bond of connexion between the remedy applied and the effects produced."

In the present day, none dispute the axiom, that correct pathology is the only solid and permanent basis of sound practice.

Yet, strange as the assertion may be deemed, the ancients in this class of cases appear to have known more than the moderns, even in this point of view; for they affixed to the margin of these ulcers the same name which they gave to the common corn on the feet (callus); and with sufficient reason, for in each case the indurated parts are composed of the same tissue, namely, a gradual accumulation of effete cuticle, secreted layer beneath layer, under the stimulus of a morbid action or an abortive effort at reparation;—to use Mr. Paget's form of expression, under an arrest or error of development.

The mode of formation of the callous margin scarcely admits of accurate description, because it usually takes place while the ulcer is not under surgical treatment, but while exposed to the many circumstances of neglect in dressing and cleanliness, errors in diet and excesses, over-exertion and fatigue, or some of the many other injurious influences to which the patient may have been subjected. Any one of these may induce the degeneration or death of the granulations at a time when the cutis is vigorously forming new skin; and this process being suddenly arrested, the cuticle at the margin may continue to be formed more rapidly than in health, just as, under the irritation of unusual pressure, callous cuticle or a corn is rapidly formed on the hands or feet.

But it is not within the scope of this paper to enter on the full history of the callous ulcer, but rather to deal with it when fully formed and established, as usually presented to the surgeon for treatment.

In this state the callous margin of accumulated cuticle forms a hard, solid ring, pressing injuriously on the parts beneath, and strangulating to a certain extent the vessels of the cutis immediately around the ulcer. I believe that all pathologists, without exception, are agreed, that the new skin for the formation of the cicatrix is derived from the vessels of the cutis at the margin. Hence it must be apparent, that, if these vessels be subjected to a pressure which amounts to constriction, the formation of new skin must be arrested. Further, surgeons accustomed to the daily observation of numerous cases of this class of ulcers will, I doubt not, call to mind not a few instances where, even under careful and judicious treatment, this ulcer has —slowly, indeed, but steadily—become larger, the surface of the sore retaining the pale glassy aspect, and the sides their hard precipitous appearance. Now, this seems precisely the effect likely to ensue on the firm and steady, but unirritating pressure of a foreign body.

As a result of the suspension of cicatrization by the constriction of the vessels at the circumference, the ulcer ceases to granulate, consent of parts being wanting; a preparation on the part of the ulcer to accept union with the skin being utterly useless so long as the vessels are constricted whose office is to form new skin.

This, then, is the condition of the parts which the very ancient operation by excision was intended to remedy; a dense ring, composed of compact layers of accumulated cuticle, acting as a foreign substance, by pressing and constricting the living structures beneath.

Some few other methods of treatment have been directed to the exclusive object of removing this ring, as a necessary introduction to other treatment; but I hope to convince you that the most safe, easy, and expeditious method, is that by excision the callous margin.

To some this assertion may appear paradoxical, but I trust not so to those who have followed the description given above. Mr. Critchett indeed says:—"Chelius recommends these callous edges, when much raised, to be shaved off with a scalpel previous to commencing other treatment—a plan (says Mr. Critchett) I have never tried, and one that I imagine would be deemed somewhat too heroic by English surgeons."

Now, this is rather an unfortunate expression of opinion on a plan which the writer confesses he has never tried, for the ground stated—that "it is somewhat too heroic for English surgeons"—is both unsound and insufficient; unsound, because, if properly performed, it is the very reverse of "heroic," being both painless and bloodless; insufficient, because, even if heroic as the author erroneously supposes, it would be much less so than others resorted to by English surgeons for the purpose of curing this obstinate complaint, as, for instance, the slashing, and starring,

and cross-cutting of certain great operators, or the application of strong nitric acid by others. This allusion to the ancient operation affords decisive evidence that the operation and the object proposed to be effected have alike become obsolete in the English school of surgery.

The excision of the callous margin is performed with the express immediate intention of removing the ring of indurated cuticle, without injuring or interfering with any other tissue. Bearing this in mind, the operator, with a sharp scalpel, carried nearly horizontally, or on a plane with the surface of the ulcer, pares or shaves off layer after layer of cuticle, till he reaches that which immediately covers the cutis; this last layer he will find very thin and transparent, through which is seen the bright red cutis beneath, bearing some resemblance to the florid margin of the lips. Beginning with about half-an-inch of the margin, and proceeding cautiously till he reaches the cutis, he is enabled to form an estimate of the varying depth of accumulated cuticle, which is always greater at the inner margin than outwardly, where it passes off insensibly into the sound skin. Having ascertained this depth, he can then proceed more boldly and rapidly to the complete removal of the margin round the whole circumference of the ulcer. If the operator is very careful, very steady, and very dexterous, he may accomplish his object without drawing blood; but the probability is, that in a few points he may wound the cutis.

The operation being completed, he will then see how very little of the apparent excavation was due to the "surrounding congestion and morbid deposit" upon which, according to most modern writers, not only the appearance of depression, but also the ulceration, depends. If he has had the manual treatment of many cases of this class of ulcers, he will be surprised at the light thrown upon their nature and treatment. He will, I think, be able to understand why some of the numerous modes of treatment have succeeded, and why others have failed,—when even precisely the same mode has sometimes succeeded, and at other times failed. He may, in my opinion, also understand why "some forms of callous ulcer are very difficult to cure by support, or any other method," where this preliminary operation, or an equivalent treatment effecting the same end, directly or indirectly, has not been adopted. The after-treatment should be that usually employed to promote granulation. The patient should be confined to bed, and a linseed poultice applied during four to seven days. By this time the ulcer will usually be covered with the small, firm, conical, florid granulations which characterise the reparative process, and from the margin will be seen the bluish-white film of new skin and cuticle passing over the new granulations; while already the size of the sore will be diminished by the contraction which takes place almost simultaneously with the re-establishment of the healthy process of reparation.

The ulcer is now in a fit state for the employment of the treatment adapted for healthy ulcers, on which I need not at present dwell.

The operation described appears to date its origin at least as far back as the days of Hippocrates. The indefatigable translator of the Sydenham Society's edition of the works of that author and of Paulus Ægineta, the learned Dr. Adams, of Banchory, has, in both works, shown that it was advised and practised by them, and by a long succession of great authorities, down to a comparatively recent period.

[To the close of the last century the callous ulcer was treated by excising its margins. In 1780, Mr. Benjamin Bell recommended the application of the nitrate of silver instead. Mr. Baynton, however, not long afterwards drew the attention of the profession most forcibly to this disease.]

The views of Mr. Baynton diverted the attention of the Profession from the real primary obstacle to the healing of a large proportion of callous ulcers; from what may be styled the "previous question" to all plans of treatment. No doubt, many even of this class of sores recovered under Mr. Baynton's plan, because the indurated cuticle, being hermetically sealed from the action of the air, became softened by infiltration of the secretions, and peeled off with the plaster on changing the dressings, so that it ceased to exercise a compressing and constricting power on the living structures. But those who have had the manual treatment of these ulcers, must acknowledge that they have not unfrequently been almost disheartened at the utter failure of all their careful and laborious bandaging. Mr. Critchett, while strongly advocating Mr. Scott's plan, candidly acknowledges that some such cases resist the employment even of the measures he advises, based as they are on what he con-

siders the only sound principle. I have, however, some ground for stating that the late Mr. Scott, of Bromley, in his own practice, occasionally resorted to a measure which effectually removed the callous edges, and stimulated the surrounding integument to new and vigorous action. Many years ago, one of the surgeons of St. Thomas's Hospital, mentioned publicly in the wards, that he had been told by a patient who had been under the care of the elder Mr. Scott, that the strapping and bandages, having been applied in the accustomed manner, were allowed to remain untouched for about ten days, exercise being enjoined from the commencement. When removed, at the end of that time, it was found that, not only the callous edges were removed, but the ulceration had apparently extended over a large portion of the leg; the acrimony of the retained discharge from the sore, and of the secretions from the sound and unsound skin, having occasioned extensive excoriation. It was stated, that after this preliminary step, the usual mode of applying his bandages was employed by Mr. Scott, with the gratifying result of the rapid healing of an old and obstinate ulcer. Now, after making every allowance for the unintentional departure from strict accuracy in the reports of treatment given by a non-professional patient, we may, I think, perceive a certain amount of truth in the above account; especially when we recollect the admitted success of the blister, as recently advised by Mr. Syme, and in ancient days by Hippocrates, and by most systematic writers in all subsequent ages. The operation of a blister is similar to the mode said to have been pursued by Mr. Scott, though more rapid. In each case sound and unsound cuticle would be removed at the same time, and with it the solid ring forming the callous margin. Mr. Syme's plan is another instance where a remedy proposed for one purpose actually effects another, and in that way proves beneficial. Objections have been raised, as that the blister is very painful, and that patients are unwilling to submit to the application,—an objection which must be deemed valid when a painless substitute is offered, and that more efficient. Another still stronger is, that it is apt to produce permanent irritability of the skin. A third objection can scarcely be deemed admissible; it is said to be "insufficient of itself to effect a cure." The same objection would avail against any single mode of treatment. As I understand Mr. Syme's proposal, he intends the blister as preparatory to other treatment. Now, in point of severity, the treatment by excision will bear a most favourable comparison either with that said to be Mr. Scott's, acting by the acrimony of the retained secretions, or with Mr. Syme's blistering plan, or with the recent method, by applying nitric acid; while, as to safety and rapidity, I think not a question can be raised. Mr. B. Bell's proposal to substitute arg. nitr., with the direct view of removing the callous edge, I tried extensively in conjunction with the plan of Mr. Higginbotham, of Nottingham, but in this class of ulcers, without a single instance of success.

The more indirect plan, as that by filling up the wound to the level of the margin with melted wax, I have seen to fail, even in the hands of the proposer's friends and fellow-students. Where it has succeeded, the cause has probably been, that the wax, when cold and firm, took off the pressure of the solid ring of cuticle from the vessels of the cutis.

Mr. Skey's treatment by small doses of opium I have known to be followed by occasional success, even in other hands, though many have been greatly disappointed. Having practised in a district where opium eating is not uncommon—where the white poppy is commonly grown in the peasant's garden, in order that the cottage may always have a supply of poppy-tea for the infant, while the mother goes out stone-picking or weeding, or other field-work—I have met with old ulcers among habitual consumers of opium; and here of course Mr. Skey's proposal fails us. Perhaps the true explanation of the success which has followed many plans in hospital practice, may, in some instances, be found in the improved health which attends on rest from labour, on regularity of hours of meal-time and repose, and on a regulated diet. On one occasion I determined to put these influences to the test in the case of a prisoner for theft. He had had an ulcer over the front surface of the tibia for seven years. The sore was about the size of a half-crown, with elevated edge, and smooth glassy surface. He was put on the ordinary prison diet, which was ample or even liberal, but not allowed beer, wine, or spirits. Of course he was not permitted to work on the tread-wheel, but other work in-doors and out was provided, and he had at least two hours out-door exercise daily. The only applications were lint to the wound, and simple ointment, to prevent evaporation, care being taken thoroughly

to cleanse the surrounding skin, and to prevent the patient from wiping the surface of the sore, which had been his previous habit. The improvement was steady. In about six weeks the ulcer was firmly healed, and continued so during the term of his imprisonment. As usual, he again committed an offence which brought him under my notice some months afterwards, when I had the opportunity of ascertaining that the cure was permanent.

I have thus hastily and imperfectly reviewed the opinions entertained in ancient and modern days of the circumstances which occasion the acknowledged difficulty in the treatment of the old callous ulcer. I have endeavoured to show that the primary obstacle to all successful treatment is the presence of a solid ring of compact and indurated effete cuticle; that the necessary preliminary curative measure is the removal of this ring; and that the safest, the mildest, and yet the most speedy and efficacious method of attaining this end is the excision of the callous margin, strictly confining this operation to the paring or shaving off the accumulated cuticle without wounding the cutis.

For a practical knowledge of this operation, I am happy to acknowledge my obligation to Mr. Hewson, one of the surgeons of the Lincoln County Hospital, who told me, that he had acquired his familiarity with it from a House-surgeon of that institution, whose thirty years' tenure of office dated from the commencement of the current century.

[Mr. South declares the success of this mode of treatment to be admirable. Here are the notes of some cases at one time under him.]

David Brooks, aged 30, labourer, was admitted into Henry's Ward, St. Thomas's Hospital, Aug. 14, 1853. He has an ulcer on the right leg, consequent on an injury sustained ten years ago, since which time it has never entirely healed. He has lived very badly, being at times half starved. Has usually worked among the barges on the river, being often a considerable time in the water and mud. Numerous remedies were applied to the sore with little or no effect, the hardened cuticle appearing to form a barrier to the cicatrization. At last, Mr. South determined to try the effect of paring the edges of the ulcer. This was done several times, and the sore soon showed a healing margin. Before the sore was quite healed, the patient was discharged, in consequence of a deficiency of beds. He then became an out-patient, and then was again admitted into the hospital; but of subsequent progress no notes were taken. There was no doubt of the benefit ensuing on the paring of the edges while he was in Henry's Ward.

Timothy Driscol, aged 40, an Irish labourer, was admitted into George's Ward, St. Thomas's Hospital, on Tuesday, September 13, 1853. He has had, on the front of the right leg, an ulcer for the last sixteen years. It is now about the size of a man's hand; the edges are raised and callous, and the surrounding cuticle is much thickened; the surface of the sore is glassy, but at the edges are a few unhealthy granulations. He suffers little or no pain, unless from injury; the discharge is scanty, thin, and unhealthy. Mr. South directed the application of linseed poultice and the dilute nitric acid lotion. After a little time the granulations became more numerous and healthy, but the edges showed little inclination to heal, the white callous ridge remaining as on admission. About three weeks after admission, Mr. South directed the edges to be pared. Hardened cuticle, in many parts of some thickness, was removed; this was done with little or no pain to the patient, and the bleeding was inconsiderable. In some parts, where the edges were not so hard, simple scrapings were required At the end of a week a manifest improvement had taken place; a thin healing margin extended towards the centre of the sore; the same applications were continued. The paring process was repeated several times at intervals of about eight or ten days. As soon as the granulations rose to the level of the surrounding healthy parts, simple ointment and bandage were applied, the edges being now perfectly natural. The sore healed rapidly, and, when the patient left the hospital in December, was not larger than a half-crown. He afterwards attended as an out-patient, bandages being applied till the sore was entirely healed.—*Med. Times and Gazette*, *Jan.* 28, 1854, *p.* 81.

124.—*On a New Mode of Treating Ulcers from Irritation of the Nails.*—At a

meeting of the Harveian Society, Mr. Ure related the following case of a young woman aged 23, who was under h's care at St. Mary's Hospital.]

Four months before admission, the great toe of the right foot became uneasy and swollen, the patient having pared the nail the day preceding. Ere long, a painful and irritable sore made its appearance by the side of the nail, which discharged from time to time a quantity of thick, bloody, and sometimes black-looking matter. She was thus disabled from going about and earning her livelihood. For four years antecedent, she had been in indifferent health, and had suffered from excessive flow of the catamenia. She had procured the advice of some respectable practitioners, and been under treatment during several weeks, without, however, obtaining any benefit. As the sore was rather in an inflamed state on her admission, poultices were applied. On the third day, when all surrounding inflammation seemed to have subsided, Mr. Ure prescribed the use of a salve composed of one grain of finely levigated arsenious acid, incorporated with an ounce of spermaceti ointment. He was led to try this remedy by the suggestion of Mr. Copeland, who deemed it almost a specific in ulcers of this nature. This was steadily employed for about ten days, without producing any marked change on the sore. Mr. Ure then ordered, instead, the continuous application of a hot saturated solution of alum. This induced rapid absorption of the thickened parts, and prompt cicatrization of the ulcerated surface, so that the patient was enabled to leave the hospital, cured, in the course of three days. Mr. Ure observed that, while alum is soluble in five parts of water at 60° Fahr., it is soluble in little more than its own weight of water at the boiling temperature. A hot saturated solution is, consequently, more energetic in its action than a cold one. He had been led to resort to its use in the above instance from having witnessed its efficacy in an analogous case. A gentleman consulted him in the autumn of 1852, concerning a sore seated by the side of the nail of the great toe, which had annoyed him for nearly a year. A variety of treatment had been exhausted in vain attempts at cure, including the plan proposed by Sir A. Cooper, of paring the nail as thin as possible, raising the edge, and inserting a small piece of lint between it and the sore; the free application of lunar caustic, as recommended by Mr. Wardrop; and also blistering the part. By the constant application of a saturated solution of alum, as hot as could be borne, this refractory sore was eventually healed in a few days.—*Lancet, March* 18, 1854, *p.* 308.

125.—EXTENSIVE PHAGEDÆNIC ULCERATION, SUCCESSFULLY TREATED BY THE ACTUAL CAUTERY.

By Dr. S. T. Chardwick, Bolton-le-Moors.

[This patient, 25 years of age, ten days after exposure to contagion, observed a small pimple near the frenum on the penis. Caustic was liberally applied, apparently with success. At the end of a fortnight, swelling in the groin came on, an abscess formed, which burst spontaneously. The sore on the penis was nearly healed. Subsequently the opening in the groin extended rapidly, and he soon labored under all the symptoms of irritative fever.]

Where the chancre had existed there was a slight depression, some discoloration, but no hardness of the base; it had been cicatrized for two or three weeks. In the groin was a foul ulcer of the size of the palm of the hand; its surface presented a yellowish dark aspect; the edges of the wound were ragged, uneven, and undermined, secreting a thin, fœtid, sanguineous discharge; an areola of a livid tint surrounded the wound for a considerable extent. I ordered him to be confined to bed, to live on broths, jellies, and farinaceous food. The compound decoction of sarsaparilla with nitric acid, twelve grains of Dover's powder, at bed-time. To the ulcer, the nitrate of silver, an opiate lotion, and poultice of linseed-meal. To give the symptoms and treatment of this protracted case *in extenso* would be tedious. Suffice it to say he took the compound decoction and extract of sarsaparilla, the mineral acids, quinine, opium, and various preparations of iodine; to the wound were applied the strong nitric acid, muriate of antimony, the balsam of Peru, different kinds of lotions, ointments, and poultices. The edges of the ulcer were cut away by means of curved scissors; a moderate allowance of stimulants and a suitable regimen enjoined; still, however, the phagedæna continued progressing, so that

after the expiration of six weeks from the time of my first seeing him, its size had got almost treble in extent, sometimes assuming a more healthy character, but most provokingly soon again relapsing into the original diseased action.

His friends becoming alarmed, they requested that Dr. Pemberton, of Wigam, might see him along with me, and the same evening he did so. That gentleman made some suggestions as to treatment, which were carried out for a fortnight, but unfortunately, as heretofore, without any alleviation of the symptoms; in addition to which, our patient had now profuse perspirations, colliquative diarrhœa, excruciating pain, and sleepless nights. All these circumstances combined exhausted him to an alarming degree. Now the wound extended down the inside of the thigh towards the ischium, across one side of the pubes to the linea alba, proceeding upwards half way towards the umbilicus. As we had tried every remedial measure we thought likely to be beneficial, Dr. Pemberton informed me that Mr. Moore, of Bolton, had related a similar case to him, which also had resisted every plan of treatment, until it was resolved, as a *dernier ressort*, to apply the actual cautery, and which had the desired effect.

We expressed a desire that Mr. Moore should meet us in consultation, and accordingly the following day he did so. After examining the case, and being informed of the treatment that had been adopted, he gave it as his decided opinion that nothing short of the hot iron would prevent the patient succumbing from the malady, to which procedure our patient, nearly worn out by suffering, at once assented; consequently it was done at once, and afterwards the parts covered with pledgets of lint, spread with cerate, composed of two parts of the cerate of resin, and one of the oil of turpentine; a draught was administered containing forty drops of tincture of opium, which was followed by several hours of refreshing sleep.

In a week after the operation his appearance was marvellously improved, diarrhœa ceased, perspiration less copious, pain comparatively trifling, appetite returning; the spreading of the ulceration arrested, discharge more healthy, surface of the wound granulating, and cicatrization in some parts commencing.

In a few days subsequent to the above report there were appearances evinced at two or three points, at the edges of the wound, of the phagedænic ulceration re-commencing, which were, however, speedily changed on the second application of the cautery.

It was astonishing to observe the rapid reparation of so great an extent of mischief. Granulation and cicatrization went on so quickly, that in the course of a few weeks the wound was reduced to little more than the size of a crown-piece, when the healing process became suddenly arrested; the ulcer now became of an indolent character, with thickened edges, its surface shining, and of a pale colour, and it was not before the lapse of several months that it became entirely healed.

The last time I saw the patient was in about two years after his recovery; he was then in excellent health, but the appearance of the groin was somewhat forbidding, from the extent of cicatrix, puckering of the integument, and two or three extensive bands, that had the effect of drawing the thigh on the body, which were liable to crack and ulcerate from very trifling causes.—*Lancet, Jan.* 7, 1854, *p.* 4.

126.—*Treatment of Favus by Sulphurous Acid Lotion.*—By Dr. J. H. Bennett, Edinburgh.—The treatment I have found most useful in favus is, after removing the crusts with poultices and shaving the scalp, to keep the surface moist with cod-liver oil. Certain it is that so long as the oil is applied the disease never returns, and in the majority of cases in young persons, especially if they be well fed, a permanent cure is effected in about six weeks. Having observed, however, that Dr. Jenner, of London, had treated the disease by means of a sulphurous acid wash, composed of one part of sulphurous acid mixed with three parts of water, and knowing the powerful effect of this acid in checking parasitic vegetable growths, I tried this treatment in the Clinical Ward. Dr. Alexander Struthers informs me that, in January, 1853, when resident clinical clerk, he had treated a case of favus with success in this manner. Five cases, in all of which the parasitic character of the favus crusts was demonstrated by means of the microscope, were selected for trial. In all, the crusts were first removed by poulticing, and the head was kept shaved. Lint saturated with the

lotion was ordered to be applied over the entire scalp morning and night, and the whole kept constantly moist by wearing an oil-silk cap. In two cases, about the third week, the favus crust had already come back, which I traced to the oil-skin cap having become displaced during the night, and not covering the scalp with sufficient care. In the other three cases the surface was kept moist and clean for six weeks. Then the treatment was suspended, and in twelve days the favus had returned in two cases. In the third case a cure was effected, and what is singular is, that it was the worst case of the five.—*Monthly Journal of Med. Science, April*, 1854, *p.* 302.

127.—*Treatment of Psoriasis.* By JONATHAN TOOGOOD, Esq.—[Mr. Toogood, in his 'Reminiscences of a Medical Life,' gives the following case of this obstinate skin disease, as related by Mr. R. Strong, with whom he attended the patient.] E. H., a girl about sixteen years of age, who had been liable to slight attacks of psoriasis about three years since, after having undergone great bodily fatigue and mental anxiety, became the subject of a much more aggravated form of this disease than I had ever before witnessed. The skin of the arms, legs, and face, was first affected, and it very rapidly spread over the whole body. The fissures in the bendings of the joints were so extensive that she could scarcely move, and on getting out of bed in the morning the scales fell from her in such quantities, that I could easily trace where she had been; and the eyelids were so retracted, that she could not close them when asleep. I tried Plummer's pill, hydrargyrum cum cretâ, with various tonics, in conjunction with liquor potassæ. I then had recourse to liquor arsenicalis, and baths of sulphuret of potash, none of which had the slightest effect; and the poor girl's strength failed her so fast that I began to think the disease would destroy her, when fortunately I was induced to consult you, who advised my trying pitch, in the form of pills. I did so, giving her at the commencement ten moderate-sized pills three times a day, and gradually increased the dose until she took the enormous quantity of ninety pills every day, thirty at a dose. She had not taken the pills more than a week before there was a decided improvement apparent; and in six weeks or two months, she became quite free from every symptom of the disease, and has up to this time continued quite well; and, what is more extraordinary, there is not the slightest mark left on the skin.—*Brit. and For. Medico-Chirurgical Review, April*, 1834, *p.* 483.

128.—*On Pemphigus.*—[The following important *conclusions* were arrived at from the detailed notes of eighteen cases of this disease, under the care of Dr. BENNETT, MR. SKEY, and MR. STARTIN.]

1. That pemphigus is a disease affecting all periods of life; especially liable to occur between the ages of 4 and 25.
2. That, like many other skin diseases, it very frequently recurs in those who have once been its subjects.
3. That it usually affects those only of a fair complexion and thin skin. (To this we find no exception among the cases in which note has been made as to the complexion.)
4. That it is rather more common in the male than the female sex.
5. That its severe chronic and relapsing forms are more frequent than the benign and transient.
6. That the parts most liable to be affected are the legs, arms, genitals, abdomen; seldom the face, and very rarely the hairy scalp.
7. That the serum of the bullæ is almost always alkaline. (It was tested in most of the cases, and no exception occurred; the alkalinity was generally very great.)
8. That it is very rarely a subject of congenital, and perhaps never of acquired syphilis.
9. That it occurs commonly to those of good physical conformation, but is mostly coincident with temporary cachexia.
10. That it is not very markedly influenced by season.
11. That its idiopathic infantile form is a very mild disease, and will usually recover spontaneously.

12. That it is not, as a rule, associated with any particular form of cachexia. (In but two of the cases were the patients scrofulous; none were known to be rheumatic, or to have had ague; dyspepsia was an attendant in but few.)

13. That the general indications are for the use of tonic regimen and generous diet; but that these will not suffice for the cure.

14. That arsenic may be esteemed an almost specific remedy, even in the worst class of cases.

15. That arsenic does not merely repress the eruption, but remedies the unknown constitutional cause on which that symptom depends, always very much benefiting the general health of the patient.

16. That arsenic does not prevent the liability to subsequent attacks, but that such attacks are always much less severe than the original one, and tend, if treated by the same remedy, to diminish in intensity on each successive occasion.

17. That the early age of the patient does not in the least forbid resort to the arsenical treatment.—*Med. Times and Gazette, Feb.* 11, 1854, *p.* 135.

129.—*Pityriasis Versicolor Curable by Local Applications.*—This common disease known vulgarly as "Liver spots," and in the Nosology of Wilson as Chloasma, is one generally acknowledged to be of extreme intractability. Mr. PAGET, we notice, among his out-patients at St. Bartholomew's, does not adopt any constitutional treatment whatever, but simply orders a wash of the bichloride of mercury, (gr. j. ad ℥j.) He informs us that he has never known a case long resist the influence of this remedy regularly applied to the whole affected surface once in the day. At the Skin Hospital, although an arsenical course of internal medication is always prescribed at the same time, yet a mercurial lotion is also used, and may possibly be the chief curative agent. In the hands of Dr. JENNER, at the University College Hospital, the sulphuric acid has, we understand, succeeded very well. There can be little doubt but that the disease is almost invariably curable by local applications solely (parasiticides ?) In relation to this mode of cure, it is important to connect the observation of Eichstedt and others, as to the eruption depending on the presence of a cryptogamic plant. Another interesting link in the same chain of evidence has recently been made out at the Skin Hospital, namely, that it is not unfrequently contagious.—*Med. Times and Gazette, Nov.* 12, 1853, *p.* 501.

130.—*Juniper Tar Ointment.*—Dr. Routh exhibited to the Medical Society two preparations—first, the ordinary huile de cade, the product of the destructive distillation of juniper wood; secondly, the juniper tar ointment, or an ointment prepared with the former oil in the proportion of an ounce and a half of the oil to half an ounce of suet and an ounce and a half of lard. The former preparation was well known on the continent; the latter was prepared according to a prescription of Dr. Felton, of Aix-la-Chapelle, who had found it of the greatest benefit in many cases of eczema, which had resisted other treatment. He (Dr. Routh) had used it for a twelvemonth back, and found it most efficacious. It was applied locally as a salve without necessarily any other treatment more than that depending on mere regulation of the bowels. He believed it had been used by other medical men in London; but his object in bringing it forward was to have so useful a remedy more generally known and employed. His first specimen was prepared by Messrs Duncan and Flockhart, of Edinburgh; that on the table was prepared by Mr. Greenish, of New Street, Dorset Square.—*Lancet, Oct.* 22, 1853, *p.* 397.

131.—*Cure of the Itch.*—Each case of itch during the past year has been treated according to the plan formerly adverted to, viz., friction of the body with brick-dust, so as to expose the *acari* to the sulphur ointment, which is then well rubbed in for half-an-hour, and after this the man is subjected to a good ablution of soap and water. The whole time occupied by this proceeding is less than an hour and a-half,

and perfect cure resulted in each instance. Under the old plan the men were placed for three days in the itch cell, wrapped up in blankets, smeared with sulphur ointment; and a less period did not kill the *acari*.—Extract from the "Report on the Discipline and Management of the Military Prisons in 1852," by Lieut Colonel Jebb, C.B. (Blue-book.)—*Med. Times and Gazette, April* 8, 1854, *p.* 363.

132.—*Sesquichloride of Iron in Erysipelas.*—Many instances have lately occurred in the London hospitals in which the treatment of erysipelas by the much-vaunted tincture of iron has appeared to be very successful, but none of the experiments have been sufficiently crucial in their character to warrant us in considering their results as conclusive. Still, however, the evidence in favour of the remedy is very strong. Some of the patients on whom it has been tried have been young children. With regard to local applications in this disease, it may be stated, that the wrapping up the affected part in a large and thick sheet of cotton wool appears to be very superior in its protecting influence to all others. In several severe cases of erysipelas of the scalp, lately in St. Thomas's Hospital, Dr. GOOLDEN had the whole affected parts smeared over with a thick coating of white paint. The patients did very well, but the remedy is not an agreeable one to use. It is, we believe, in common employment in some of the pottery districts, where erysipelas of the face and head, from the alternate exposure to cold draughts and to furnace heat, is very frequent.—*Med. Times and Gazette, Nov.*12, 1853, *p.* 502.

133.—*Use of Collodion in Burns.*—This fluid, when applied to burns, promotes healing and prevents suppuration. Blumhardt has tried it, with great success, in three cases, one of them caused by explosion of gunpowder, and two by the ignition of spirits of wine, where the breast, neck, face, and hands were all severely scorched. Collodion was applied to the skin an hour and a half after the accident, by a hair pencil; the redness, pain, and swelling were thereby diminished, and the patients soon experienced no inconvenience save the tension occasioned by the firmly adherent pellicle. The inflammation completely subsided, and the recovery was rapid. He considers the collodion to act beneficially in two ways: *first*, by affording a safe protective covering to the sensitive cutis, and, *second*, by giving a uniform support to the part, and relieving the capillaries from all undue distension.—*Würtemberg Corresp. Bl. No.* 56.—*Monthly Journal of Med. Science, April*, 1854, *p.* 372.

134.—*On the Treatment of Corns.* By DR. FREDERICK JAMES BROWN, Chatham. —[Dr. Brown has been successful in treating these troublesome growths by *enucleation*. It seems that a corn can be picked out of its nest or concavity. Dr. Brown proceeds to describe what happened on his own person.

In 1851, a corn formed on the pulp of the index finger of my left hand, as a direct consequence of practising upon a violin. Its size was about three-twelfths of an inch long, and one-twelfth wide. I must acknowledge that the situation of the corn was evidence of my inattention to the injunction of the music masters,—viz. to press the strings with the tips of the fingers, and not with the pulp. Violinists usually have corns at the tips of their fingers.

The corn was a sort of annoyance to me, and interfered with the use of the finger. Some months after its formation I applied to the corn a piece of lint covered by simple ointment, and kept the lint to the part day and night. After a few days I noticed that there was a slightly-raised line of cuticle surrounding the corn, making it apparent that the latter was set in a depression as is a stone in a brooch. I carried a penknife in a vertical direction in the groove betwixt the raised line of cuticle and corn. At one spot, a drop of blood appeared, and gradually became diffused beneath the corn. Next day the corn dropped out, leaving the true skin perfect, with the wavy lines of the finger in a normal condition, and covered by cuticle in a natural state. The cup-like depression ceased to be apparent after a short period.

This case clearly shows that a corn produced by repeated pressure of the finger against a violin-string consists of indurated layers of cuticle placed upon normal cuticle, and seated in a cup-like depression of the cutis vera.

A few weeks back I operated on a friend who was suffering with a corn on the great toe, in the usual situation of a bunion, which it closely resembled. In this case I used no ointment, but passed a penknife vertically around the corn, for the full depth of the indurated cuticle, in the situation of the marginal line (which from pressure and dryness was scarcely apparent). The next step consisted of lifting out the corn by evulsion, or rather by a process of enucleation, aided by a few touches of the knife. The true skin was not wounded, consequently there was no effusion of blood. After the corn was taken out, a minute one was found beneath the situation of the larger corn, and it was removed in a similar manner.

This is all the experience I have had in corn operations, but I advance the method of enucleation as one that is effectual, simple, and unattended by much pain.—*Lancet, April* 15, 1854, *p.* 417.

135.—*On Inoculation with Milk and Variolous Pus to supersede Vaccination.* By M. Bossu.—M. Thiele (of Kassan) and M. Robert (of Marseilles) have proposed to blend variolous matter with milk, for the purpose of weakening the poison, attenuating it, and localising its effects upon the economy. This proceeding, justified by some success, has attracted considerable attention, because it furnishes the means, in the event of small-pox invading any locality, of replacing the vaccine matter which may be defective in quality or deficient in quantity, with a prophylactic furnished by the epidemic itself. In 1832, M. Brachet (of Lyons), starting with the idea that the vaccine eruption probably owed its properties to the milk contained in the breast where it was developed, inoculated three young infants with a mixture, in equal parts, of milk and variolous pus. These three patients were put in a ward where a young girl infected with confluent small-pox had just been admitted. The infants escaped; but each became affected round the punctures with an eruption precisely similar to that produced by the vaccine virus, and which remained local.

New experiments have been recently tried at La Charité of Lyons by M. Bouchacourt, Surgeon-in-Chief, and to these we shall direct attention.

Equal parts of cold milk and variolous pus taken from the pustules in the vesicular stage of naturally-developed small-pox, were mixed upon a piece of glass. Punctures were made in each arm with a clean lancet charged with the liquid. Five infants were directly inoculated. Three were inoculated successfully from arm to arm with the liquid contained in the pustules resulting from the first inoculation: primary transmission. Three were inoculated from arm to arm with the liquid obtained from these new essays: secondary transmission. Four were inoculated from arm to arm with the liquid coming from this second indirect inoculation; tertiary transmission; success, as the preceding. Three were inoculated with the liquid collected from the pustules produced by the first transmission, and preserved eight days; two with the liquid preserved eleven days; and, finally, one infant was inoculated with the liquid coming from the pustules produced by this last experiment.

Of these twenty-one children, of ages varying from eight days, five months, and eleven years, eighteen presented pustules precisely similar in character and duration to those of cow-pox, limited to the seat of puncture.

In two newly-born infants, the circumference of each pustule offered about the sixth day, one or two smaller pustules; but these disappeared as the mark of inoculation faded.

In another child, aged five months, there followed four pustules scattered over the neck and shoulders. They were small, vesicular, and not depressed, and disappeared with the pustules produced by inoculation. This infant was very susceptible, and the poison had been taken from a case of confluent small-pox; thus the phenomena were not more serious than those resulting from ordinary vaccination.

It then became necessary to test its power as a prophylactic.

Two of the children above-mentioned were vaccinated in the usual way eight or ten days after the disappearance of the phenomena resulting from the lacto-variolic inoculation; and at the same time two other children about the same age, but who

had never had either small-pox or cow-pox, were vaccinated with matter coming from the same pustule. Vaccinia developed itself in the last in its common form. In the first, no effect ensued. A child previously vaccinated was inoculated with the lacto-variolous pus. The result was negative.

Commencing with this equivalence between vaccine virus and the lacto-variolous fluid, M. Bossu proposed a series of inquiries to determine—1st. From what form of small-pox should the virus for inoculation be taken? 2nd. At what phase of pustulation should it be collected? 3rd. At what age the operation is most fitted? 4th What conditions insure success? 5th. Does the fluid coming from the lacto-variolous pustule admit of being preserved in an efficient state?

The interest attached to this subject, and the able manner in which it has been treated by M. Bossu, are acknowledged; but further investigations are required before the practice can be sanctioned by the Profession.—*Journal Hebdom., March* 17. —*Med. Times and Gazette, April* 22, *p.* 412.

AFFECTIONS OF THE EYE AND EAR.

136.—ON THE REMOVAL OF A PARTICULAR KIND OF OPACITY FROM THE CORNEA.

By H. Haynes Walton, Esq., Surgeon to the Central London Ophthalmic Hospital.

[The employment of practical surgery in the treatment of opacity of the cornea is of great antiquity. Recently the subject has been more discussed, and there is no doubt that by this measure we are enabled to alleviate a condition which is commonly considered as incurable. The following case illustrates the treatment.]

Elizabeth Wheeler, aged 29, became a patient here so long ago as 1845; attended me for some months, then resorted to some other ophthalmic institution; and ultimately replaced herself under my care, in the summer of last year—1852. Of the prior attendance I have no data; my notes apply to the re-entering. She was virtually blind, requiring to be led, and unable to perform any act demanding eye-sight. The centre of each cornea, to an extent a little beyond the pupil (the left eye being the more affected), was occupied by dense opacity, slightly raised, and which gave in profile somewhat the appearance of "conical cornea." The form of each was irregularly spherical, with sharp outline. The colour, French-white, with dots or mottlings, not unlike those which appear on the back of the cornea in the affection called "aqua-capsulitis." Altogether, the appearance was peculiar and striking, differing from that of ordinary opacity, and conveying the idea of being due to a deposit of a substance probably cretaceous. The remainder of each cornea was transparent; otherwise the eyes seemed healthy. When the pupils were dilated, she could see to move about in the house alone; but there was not sufficient sight for any employment.

Nothing of her history of any value could be gathered, and a long examination elicited merely that from childhood she had been subject to inflammation of the eyes, and her blindness was of about ten years' duration.

Reflecting on the insufficiency of previous treatment, and on the physical character of the disease, I concluded that I had before me a case that warranted operation. I decided to employ the miniature gouge, which, as you know, I generally use to remove foreign substances from the cornea, and to pick away, as it were, the opacity. This I considered safer than to use a knife.

I selected the right eye, picked away at the outer margin of the opacity, detaching some, and was not a little gratified to find that it was superficial, and, as I hoped, not deeper than the anterior elastic lamina. Finding my attempt successful, the opacity reduced, and transparency of the cornea thus far restored, I repeated my little process four times, at intervals of a month, and operated twice on the left eye. Now, there was vision enough with the right for her to read large type, and with the left she could move about alone. Still in both, especially the left, some opacity remained.

She ceased to attend me from this period till the present summer, when I operated twice more on the right eye, and nearly, but not quite established a clear cornea, a small spot of opacity passing deeper than I deemed it prudent to penetrate. The

left eyeball, too, was scraped a few times, and here, also, a central deep bit resisted removal.

To conclude the report,—the appearance of the eyes is so far natural, that it needs a careful examination in a favourable light, to detect the remaining opacities. The form and outline of the corneæ are normal, and their entire surfaces reflect the light. Vision is nearly perfect. With either eye she can thread a common sewing-needle, (No. 6,) but the left is rather the more perfect.

As this is the only case of the kind of which I have personal experience, I have little to aid to the facts that it affords.

Perhaps the first points of practical import that demand remark, are the fitness of the case for the means used, and the signs by which such cases may be diagnosed. Concerning the first, the opacity being raised, and to all appearance of earthy nature and superficial, induced me to interfere. I suspected that there was a circumscribed deposit of a foreign substance, which could be removed, just as one would extract a particle of iron, or any other extraneous matter, imbedded in the cornea. As to the second, I trust it is sufficient to put you on your guard to prevent you from mistaking small staphylomata of the cornea, or fungous growth from the conjunctiva, for this affection. You must be observant to prevent such errors. It is by personal observation alone that you can learn their distinctive characteristics. Of the precise nature of the substance scraped away, I cannot speak, as neither minute chemical nor microscopic examination was made. I did not detect any grittiness with the instrument, but this does not disprove an earthy nature.

I must tell you that this class of treatment is not restricted to opacities that are raised. So long as we have tolerable assurance that the loss of transparency of a part of the cornea is due to deposit of earthy material, there can be no reason against operating, although such deposit does not interfere with the natural outline of the part. At the same time, the opposite state renders diagnosis more certain, insomuch as it goes to prove that there is some material superadded. Nor does the practice end here; it has been applied to opacities the result of cicatrices from loss of substance of the cornea, or from opaque deposit, the consequence of inflammatory attack; but I should be travelling away from the case before us to enlarge on this; you may find a full account of the subject in my Work on 'Operative Ophthalmic Surgery,' in the chapter on the removal of opacities of the cornea by operation. I shall, therefore, confine myself to a short statement from Mr. Spencer Wells, who was present at one of the occasions of my "scraping." Mr. Wells saw Malgaigne perform his second operation, of paring opacities of the cornea, at the Hospital of St. Antonia, Paris, 1845, as follows:—He made an incision above the upper edge of an opacity, which covered the lower part of the cornea, and divided the external laminæ. He then fixed the edge of the opaque portion with fine forceps, and on raising it this peeled off very easily, and the separation was completed by another incision round the lower edge. Mr. Wells saw the first patient upon whom M. Malgaigne had operated six months before, and the cornea was perfectly transparent. Mr. Wells tells me that he has himself repeated this operation in two cases, with equally favourable results.

You should realise to your mind, that this application of practical surgery has reference to a portion of the eyeball, about the thickness of one's thumb-nail, and to separate the component parts of which, even on the dead eye, demands exquisite manipulation.

Let us now enquire a little into the conditions essential to the success of scraping the cornea. It is necessary that that portion of it posterior to the operation, do retain its transparency, and that the repair of the injury inflicted by the instrument be effected by transparent material. I imagine that little is to be apprehended from failure in the former, and the fulfilment of the latter must, I conclude, depend on the depth to which the true corneal tissue, the laminated part, is penetrated.

I strongly suspect that the perfection of repair differs in the two instances of loss of structure from ulceration, and from wounds, being by far more complete in the former. That a breach by ulceration, provided it be small, which will penetrate far into the laminæ,—nay, even go through them,—may, under favourable conditions, be filled by a material in no respect inferior in transparency to the original structure, while the removal of any of the laminæ by art, or the separation of them, must be attended with the greatest risk of opacity, and that in proportion to the extent of the

wound. It is said that Malgaigne, who made a great stir about the operation at the time of its revival among educated surgeons, for it seems that it had lapsed into the hands of itinerant oculists, sought to convince himself of its practicability by removing laminæ from the corneæ of animals, and obtained success that encouraged him to operate on man. The chance of inflammation of the cornea supervening on any one of these operations, and so spoiling that which had been transparent, must be taken into the general account in deciding on the mechanical treatment of opacities. The dread of this was the reason of my proceeding cautiously and in so piecemeal a manner, effecting by many stages what might perhaps have been accomplished at once, or at least by much fewer operations. I have nothing to regret from my caution. But slight action followed each of the applications of the gouge, and the effect so caused passed off in two or three days. It is probable, judging from the result of the operation, that the instrument never penetrated beyond the anterior elastic lamina. The restoration of epithelium, always rapid in slight abrasions of the cornea, was quickly effected.—*Medical Times and Gazette, Nov.* 5, 1853, *p.* 469.

137.—*Pathological Remarks on the kind of Palpebral Tumour usually called in England Tarsal Tumour.* By H. Haynes Walton, Esq.—[Mr. Walton describes the intimate structure of one of these tumours as follows:]

It consists externally of a dense fibrous cyst, continuous with the fibrous tissue of the lid; within this a layer of fibro-plastic matter, soft, pink, abundantly supplied with vessels from the fibrous cyst, composed of fibro-plastic cells, with a very little intercellular fibrillary matter; within this a thin pellucid cyst, containing a puriform fluid, made up of pus globules, epithelium cells loaded with oil, and in the centre a perfectly round pellet of sebaceous matter. In conclusion, he suggests the following to be the order of development—first, the formation within a Meibomian follicle of a pellet of hard sebaceous matter; secondly, the secretion of more copious epithelium and fluid matter around; thirdly, the addition of fibro-plastic matter round the obstructed gland follicle, distending the loculus of fibrous membrane into a cyst. This, together with a dissection of other tumours of the kind, as also the structure and relation of the Meibomian glands and their ducts, were illustrated by accurate drawings. Mr. Walton suggests the term Meibomian tumour. In a postscript to the paper he advises that whenever the Meibomian tumour takes an outward direction, and calls for the exercise of practical surgery, it is better to divide it on the outside, squeeze out the contents, and pull away the cyst with a pair of forceps. He adds that there need be no fear respecting the formation of a scar, provided the incision be made horizontally, and the edges accurately brought together by a plaster.—*Lancet, Feb.* 4, 1854, *p.* 137.

138.—*New Instrument for Injecting the Lachrymal Sac.* By Mr. Obre.—The extreme difficulty, if not impossibility of introducing fluid into the lachrymal sac, in cases of chronic inflammation, with Anel's syringe, passed through the puncta, induced Mr. Obre to have a silver canula constructed, the same shape and size as the sound of Gensoul, to which is attached a small vulcanized india-rubber bag, about the size of a nut, into which the injecting fluid is introduced. The canula having been passed through the nasal duct by the inferior meatus, slight pressure of the thumb on the india-rubber bag propels fluid. No more difficulty is found in passing this instrument than the ordinary sound, a little practice soon overcoming any difficulty. It is necessary there should be a canula for either nostril; the india-rubber bag is made to screw on either as required. Mr. Obre stated he had not brought this instrument before the notice of the profession until he had at first given it a fair trial, and proved its utility. It is made by Mr. Coxeter. The diagram represents the invention.—*Lancet, Jan.* 28, 1854, *p.* 111.

139.—M. KOTZIUS'S NEW OPHTHALMOSCOPE.

By T. Spencer Wells, Esq.

The instrument of Helmholtz is undoubtedly a great assistance in examining the condition of the refracting media of the eye. The condition of the lens and its capsule and of the vitreous humour can be much more accurately defined by its use than by ordinary observation; but, after numerous trials, I became convinced that its illuminating power is far too feeble to enable one to see at all distinctly anything whatever on the retina, and that an instrument more recently contrived by M. Kotzius, of Leipzic, is immeasurably superior in this respect. The instrument of Helmholtz is preferable for examining the refracting media, and it possesses the great advantage, that it may be used with an undilated pupil without producing much contraction; while the intense light from Kotzius's instrument requires full dilatation, or the pupil becomes closely contracted. But, for the grand object of *examining the condition of the retina* itself, this latter instrument is very far superior to any other that I have seen.

This instrument consists, as may be seen by the accompanying woodcut, of a perforated mirror and a lens. The rays of light from a lamp are concentrated by the lens and thrown on the mirror. This is held before the eye to be examined, and the rays are thrown through the pupil on to the retina. The unabsorbed rays return in the same direction, and are received by the eye of the observer, which is behind the mirror, at the spot where it is perforated.

In a healthy eye, the part behind the pupil is absolutely dark. Even when the lens and vitreous humour are clear and transparent, no ordinary examination, even when the pupil is dilated, can afford any information as to the appearance of the retina. Without some artificial assistance, we cannot illuminate the retina and also see the illuminated part. The rays of light return from the retina in the same direction as they were thrown on to it, so that we cannot bring our eyes into the direction of the rays of light returning from the retina without at the same time cutting off the supply of those rays. But, by the aid of this instrument of Kotzius, the rays are reflected at an angle upon the mirror, are then conveyed to a focus on the retina by the media of the eye, and the unabsorbed rays, on leaving the eye, return to the mirror whence they came, and are also received by the eye of the observer.

When the instrument is to be used, the pupil is dilated by atropine, if not naturally dilated. The patient is seated in a dark room near the corner of a table, on which a bright lamp is placed at the level of the eye. The surgeon sits before the patient, and screens the face of the latter by an upright shade, so that the eye is the only illuminated part. Holding the mirror opposite the eye, he then adapts the lens in such a manner that a bright concentrated light is seen to fall on the pupil. Then he applies his own eye to the back of the mirror. The instrument is held at different distances from the eye until a clear view is obtained, and then the patient, by moving his eye in different directions, exposes the different parts of the retina to view. This appears rather difficult at first, but a very little practice enables one to find the proper position of the instrument. When the retina is not clearly seen, although the pupil is well illuminated, a concave glass is interposed between the mirror and the observed eye, by the hand not employed in holding the instrument.

Examination of the retina in this manner is very interesting. Bloodvessels are first distinctly seen ramifying upon it, and by tracing them from the smaller branches to the larger roots, we arrive at the point where the optic nerve enters. This differs in appearance from the rest of the background of the eye, as it is not covered by pigment, or a network of vessels, but a sort of transverse section of the nerve here lies open to view, with a few fine vessels passing through it. The arteries and veins of the retina enter and leave near the inner part. Sometimes a portion of the vessels may be seen concealed in the substance of the nerve itself, showing that

this substance is transparent during life. The two orders of vessels are distinguishable from each other, as the blood is of a brighter colour in the arteries, and the walls of the latter and their first sub-divisions are thicker than those of the veins. Pulsation cannot be distinctly recognized so far as I have been able to discern, though some observers fancy they can see it. The first divisions of the vessels border the inner side of the optic nerve, and then extend all over the field of the retina. The appearance of the red vessels on the illuminated base is really beautiful. Helmholtz remarks, that, close to the inner side of the nerve, he has always remarked a small semilunar strip of shadow, which appears to be from a fold of the retina. This appearance is universal, and is doubtless produced by the plica semilunaris. In most parts of the eye the base appears of a yellowish red, with a brighter red round the optic nerve, and darker the further we pass from it,—not of an equal colour, but as if with small darker patches. The point of direct vision (macula lutea, or foramen of Soemmering) has a peculiar appearance. The eye is directed exactly upon the ray of light, and the retina is seen at that spot to be darker, greyish-yellow, without admixture of red; and no traces of capillary vessels can be seen on it. It is difficult to make this out without practice, because the reflection from the cornea is apt to destroy it; while this reflection does not interfere when the eye is turned to either side for the examination of the lateral portions of the retina.

As an auxiliary in diagnosis, the ophthalmoscope must prove very valuable, as anything opaque before the retina must mask its vessels. Cloudiness of the vitreous humour, according to its degree, will obscure the view of the vessels of the retina. Opacity of the lens or of its capsule would, of course, act in the same manner.

But it is in assisting the study of the pathology of amaurosis that the chief utility of the instrument will be found. Dr. Donders has already distinguished a limited effusion of blood between the choroid and retina, or in the latter membrane itself with chronic inflammation,—in one case of insensibility of about two-thirds of the retina. After examining a great many sound eyes, I have myself detected, in various forms of partial or total amaurosis, congestion and varicosity of the vessels of the retina, partial removal of the pigment in patches, and exudations into the substance of the retina, or upon its surface. Representations of these appearances, when accurate, are exceedingly beautiful; and the objective symptoms of amaurosis thus become admirable subjects for the artist. When they have been thoroughly examined and carefully recorded, they must contribute important information towards the history of the disease which Mr. Dalrymple so justly said has "yet to be written."—*Med. Times and Gazette, Sept.* 10, 1853, *p.* 265.

140.—ON A NEW INSTRUMENT FOR THE REMOVAL OF POLYPI FROM THE EAR.

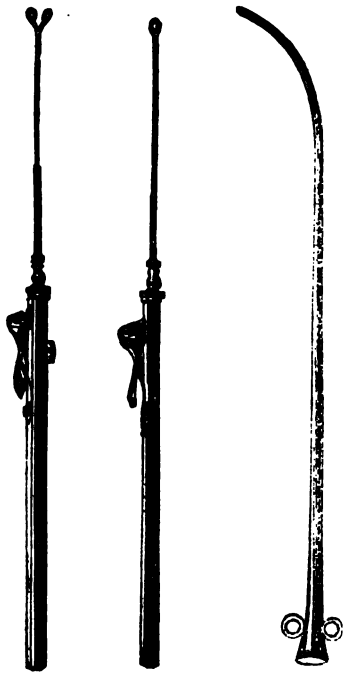
By Joseph Toynbee, Esq., F.R.S.

Various instruments have been invented having for their object the removal of the small vascular polypi from the external auditory meatus. Of these, by far the best is the snare of Mr. Wilde, which is thus described at p. 420 of that gentleman's work on 'Aural Surgery.'—It consists "of a fine steel stem, five inches long, and bent in the centre, with a moveable bar sliding on the square portion near the handle, which latter fits over the thumb. The upper extremity is perforated with holes running parallel with the stem, and loops at the angle serve the same purpose. A fine wire, fastened to the cross-bar, passes through these loops and holes; it should be of such length that, when the cross-bar is drawn up tight to the handle, the ligature is fully on the stretch.....In using it, the cross-bar is pushed forward, and a noose made of the wire at the small extremity, of sufficient size to include the morbid growth, which it is then made to surround, and towards the root of which it is pressed by means of the stem; the cross-bar is then drawn up smartly to the handle, while the point of the stem is pressed downwards; and it never fails of either cutting across or of drawing with it whatever was included in the noose."

The difficulty attendant upon the use of this instrument consists in getting the wire noose around the polypus, which frequently is of a very small size; another disadvantage is that it cuts off a portion of the growth instead of withdrawing it entire.

The instrument which I have been in the habit of using during several months at St. Mary's Hospital, as well as in private practice, with most satisfactory results, I have called the *lever ring forceps*, and it is on the principle of M. Luer's scissors. In the interior of the ordinary tube is the delicate steel rod, the end of which is split into two portions, to each of which is fixed a small oval ring measuring four or five lines long, and from two to three broad. These rings, (the inner surfaces of which are flat), as seen in Fig. 1, separate from each other when the lever is not pressed; but, as seen in Fig. 2, when the lever is not pressed, the rings are brought into contact. The instrument is introduced into the meatus with the rings apart; these may be made to enclose the polypus or a portion of it between them, and then, by pressing upon the lever, the polypus is seized, and can be drawn out.

Fig. 1 Fig. 2 Fig. 3



For the removal of the larger polypi, I am in the habit of using the *ring forceps*, which are made after the fashion of ordinary dressing forceps: but, instead of teeth, there is a ring at the end of each blade. The advantage of the rings is, that a portion of the polypus is securely held within them, while, with the ordinary dressing forceps, the polypus is generally broken up, and the removal of the roots is impracticable.

I may take the present opportunity of suggesting that the *Eustachian catheter* (Fig. 3) should be made oval instead of round. The advantages attendant upon the oval shape are, that it passes through the nose with more facility, and with less uneasiness to the patient; and that, when introduced into the faucial orifice of the Eustachian tube, the flattened surfaces are in apposition with the flattened walls of the tube; and the discomfort produced by the pressure of the convex surface in the rounded form of the instrument commonly in use is, at least partially, avoided.—*Med. Times and Gazette, Nov.* 19, 1853, *p.* 526.

MIDWIFERY,

AND THE DISEASES OF WOMEN.

141.—ON THE MANAGEMENT OF LABOUR CHARACTERIZED BY DEFECTIVE UTERINE ACTION,

AND THE COMPARATIVE VALUE OF ERGOT OF RYE AND GALVANISM IN OBSTETRIC PRACTICE.

By Dr. Robert Barnes, Lecturer on Midwifery to the Royal Free Hospital Medical College.

Defective uterine action does not always indicate a resort to the ordinary means of stimulating the uterus. There are no occasions in obstetric practice in which nicer discrimination—a more accurate diagnosis—is required, before deciding upon the means of relief, than in those cases where the contractile energy is at fault. Our choice must frequently lie between the use of agents calculated to excite contraction, and those which have a directly opposite effect. We are frequently called upon to determine whether it be better to rouse the energies of the uterus, or to resort to manual or instrumental assistance. Upon our interpretation of the symptoms, and our appreciation of all the circumstances of the case, our selection of the mode of interference will depend; and upon this selection may hang the safety or the destruction of the patient.

If it be difficult to solve the preliminary question, whether we should endeavour to excite the uterus to action or not, how cautious ought we not to be in our choice of the particular means for inducing contraction, when that course is determined upon?

The action of Ergot of Rye, and the Objections to its use.—There is one agent frequently—much too frequently—resorted to on account of its power of exciting uterine contraction, the ergot of rye. A principal object of this paper will be to exhibit the dangerous properties of this drug; to show what little mastery we have over its action when once administered, and the consequently fatal results attending an error in diagnosis—a mistake in the application of the drug. If I further succeed, as I hope to do, in proving that we possess another agent at once more effective, more manageable, and more safe, and capable of useful application in all those cases in which ergot of rye is commonly employed, I shall not have uselessly engaged the time of the reader.

The ergot of rye is capable, under certain circumstances, of producing the most marked and decisive effect in exciting the uterus to contract. An agent possessing such a power, it need not be said, is liable to abuse. It is notorious that many practitioners carry this drug in their pockets, esteeming it an indispensable adjunct to the practice of midwifery. It is amongst midwives—necessarily the most ignorant of obstetric practitioners—that this custom chiefly prevails. That this should be so is most deeply to be deplored. No agent, no species of interference in natural parturition, supplies more frequent or more distressing illustrations of that maxim, the most trite, the truest, and the most neglected, "a meddlesome midwifery is a bad midwifery," than does the ergot of rye. For one woman who has derived substantial benefit from its use at the time of labour, it may be confidently assumed that one hundred have found reason in long-enduring subsequent sufferings to rue the hour when they were made to swallow the nauseous draught under the delusive promise of a speedy release from pangs, hard indeed to bear, but mostly beneficial in their result.

In discussing the uses of ergot in obstetric practice, I think it more convenient to postpone the consideration of its use in inducing premature labour, and to refer in the first place to its employment in labour at the full time. When ergot is administered before the expulsion of the child, the effects are usually as follows:—In virtue of its peculiar property of exciting contraction of the uterus, in about

fifteen or twenty minutes the uterus is perceived to be under the influence of the drug. A spasmodic contraction begins in the uterine muscular fibres. Whether this is excited by the direct stimulus of an ergotic element carried in the blood to the uterus, and thus acting immediately upon the uterine nerves or muscular fibre, or whether the ergotic element acts primarily upon the spinal marrow—that is, whether the first step in ergotic labour is of excentric or of centric origin, it is not easy to determine. But it is quite certain that when once the contractile energy of the uterus is roused, that other actions violent in proportion to the effects of the uterus, are brought into operation. Secondly, diastaltic or reflex action of the expiratory muscles is induced with a violence in direct relation to the violence of the primary uterine contraction. If there be no invincible obstruction to the expansion of the mouth of the womb and the expulsion of the child, the child will be driven with precipitate fury through the pelvis and os externum, at the imminent risk however of lacerating the perineum, which has had no opportunity of expanding gradually and safely, as it does before the normal pressure of a labour completed by the natural powers. It should be respected as a fundamental axiom in obstetrics, that as child-bearing is a natural function, so is its safe fulfilment ensured by adequate contrivance. Each step in the long process of parturition—from the first action of the uterine muscular fibres which determines the expansion of the os uteri, to the final contractions which expel the placenta and close the open mouth of the uterine vessels—is only one of a gradation disposed according to a pre-ordained order, with a view to the final result. To invert or to disturb this order, as the use of ergot in natural labour can hardly fail to do, by anticipating the due period of the expulsive pains, is to disconcert all the arrangements of nature; to throw the whole process of parturition into confusion; to resign to the uncontrollable fury of spasmodic action that process which depends for its safe completion to mother and child on a regular co-ordination of physiological actions, in which each stage is essential to the proper progression of the succeeding one.

But if an unforeseen obstruction exist, then more terrible results must be apprehended. When an obstruction occurs in the course of labour, it frequently happens that nature takes the alarm; the uterus, so to express it, seems gifted with a kind of prescience that the obstacle is beyond its power to overcome. It therefore intermits or ceases those contractile efforts, which, if continued, would entail either rupture of its own structure or impaction of the child: the contractions become abortive. Now, when ergot is given, it is presumed that a reason is discovered for its use in the intermission or cessation of the pains. This intermission or cessation may arise—

1st, From this prescient reluctance of nature to act in the face of a mechanical obstacle.

2nd, From *exhaustion* in consequence of long-continued unavailing efforts.

3rd, Because the proper time for expulsive efforts has not yet come, and the proper physiological stimuli to diastaltic action have not come into operation.

Now, in every one of these cases the action of the ergot of rye is likely to be prejudicial; first, if in the case of an obstacle to the progress of the child, ergot be given, and its peculiar action ensue (which fortunately is not always), then the uterus contracting, and vainly contracting, upon the opposing force, is goaded by opposition into more furious efforts. Before its ungovernable struggles something must give way. Rupture of the womb is one probable termination; or the child may be jammed in an unfavourable position into the pelvis and there impacted, and convulsions and death may close in the scene. All this I have actually witnessed.

When the contraction has ceased from exhaustion, to what purpose will you lash the jaded uterus to renewed exertions of which it is incapable? In such a case ergot can manifestly have none but the most injurious effect. And yet it is in such cases that it is frequently resorted to.

It may be urged that these are not fit cases for the use of ergot, and that its injurious action here cannot be advanced as an argument against its employment in proper cases. This may be so. But then how difficult is the diagnosis—how fatal a mistake! And if ergot be a drug in such common and extensive use as it is known to be, and that amongst the most ignorant, how can we expect the diagnosis to be just, or that errors shall not be frequently committed?

The uncontrollable action of the drug when once administered, added to the difficulty of diagnosis, constitutes the gravest objection against it. A mistake is irretrievable; once given the case is as it were out of our hands. We know of no certain means of mitigating or counteracting its effects when they turn out to be

violent or altogether injurious. I propose to pass in rapid review some of the proofs of the dangers attending the use of ergot in obstetric practice, dangers too much overlooked, if not ignored, by many.

I will first consider the *dangers to the mother.*

Rupture of the uterus.—Dr. Trask, who analysed the histories of all the cases he found recorded, found that in a large proportion ergot had been given. It is quite true that in many of these cases the ergot was given in contravention of the rules usually laid down. In some there was obstruction to the labour from distortion of the pelvis, mal-position or mal-proportion. But this consideration does not diminish the value of the general fact, that ergot has frequently caused rupture of the uterus. If given before the head has descended into the pelvis, who can determine, even in the case of a well-formed pelvis, that an obstacle will not arise in the unusual or morbid enlargement of the head? If given even when the head is pressing on the perineum, the os perfectly open, and all those conditions apparently present which are held to justify the resort to ergot, who can tell whether a second or a third child may not be behind? And who would knowingly goad the uterus into spasmodic fury in case of twins? How great is the probability that the second child would be driven into the pelvis in a transverse position? Even up to the moment when the head is about to emerge from the outlet the use of ergot then is not safe, and I shall presently show that it is not necessary.

The next accident is *rupture of the perineum.* The danger of this accident is so obvious that I need not do no more than record it.

Lacerations of the os uteri, subsequent inflammation, and hypertrophy of the cervix, are events which I have frequently traced back to ergotic labour.

Prolapsus and procidentia of the uterus and bladder.—These distressing affections are not unfrequently the secondary result of inflammation and hypertrophy of the cervix uteri; but even when not thus the indirect consequence of ergot labour, they may result directly from the violent dislocation occasioned by ergot contractions. I have known a striking case of this kind.

Case 1 A woman had ergot given to her in a perfectly natural labour, to expedite delivery. It brought on one continued pain of a character and intensity such as she had never experienced before, and during which, to use her own expression, she felt as if "the whole of her body was coming from her." The child was violently extruded, and the uterus and bladder were driven down by the secondary excited action of the expiratory muscles into the pelvis, the bladder remaining outside the labia pudendi. It was not until some time had elapsed, and careful general and local treatment, that these organs were restored to their normal position.

Ergot may induce certain injurious effects upon the mother's system. Dr. Hardy relates, that in "several cases where the circulation of the patient had undergone depression from the action of ergot, the effect continued for several days, notwithstanding in some instances the inflammation of the uterus followed delivery, and the uterine tumour not unfrequently remained much larger than natural, even when there was no inflammation." Dr. Hardy also quotes the eminent authority of Dr. Johnson to the fact that "the volume of the uterus is often found much greater than after ordinary labours, imparting to the hand almost the feel of a uterus before the expulsion of the placenta."

Drs. Hardy and M'Clintock have observed a marked diminution in the frequency of the mother's pulse in from fifteen to twenty minutes after the administration of ergot. And all concur in noticing the dangerous depression following the use of ergot when given in cases where the powers of the system have been reduced by hemorrhage. In one such case ergot was almost immediately followed by most alarming symptoms, and depression requiring the most powerful stimulants. In several cases the depressed state of the circulation continued several days.

Dr. Ingleby relates the following case:—"A highly-esteemed friend once found it necessary to pass his hand into the uterus to remove an adherent placenta, the ergot of rye having been previously administered. The introduction was carefully performed. The straining and opposition to his efforts on the part of the woman were exceedingly great, and at the moment when the operator's hand had reached the organ, my own hand making counter-pressure on the abdomen, the patient became violently convulsed, and died in less than a minute." The cause of the convulsion, Dr. Ingleby expressly states, was not loss of blood.

We will now consider *the injurious effects of ergot upon the child.*

Drs. Hardy and M'Clintock observed that the pulsations of the fœtal heart underwent a similar diminution in frequency to that witnessed in the mother, and that this was succeeded by irregularity and intermission, and that it became *inaudible.* Dr. Hardy, Dr. Beatty, and others, after careful observation directed to this point, assert, that unless the child be born within a limited interval from the administration of the drug, it will be still-born. The excessive mortality of the children in ergotic labour is a fact well-established, although disputed by some practitioners enthusiastic in the praises of ergot. The Prefect of the Seine had observed an almost regular annual increase in the number of still-born children, and he was informed that in a large number of these cases ergot of rye had been given during labour. He put the following question to the Academy of Medicine:—"What may be the influence of ergot of rye on the lives of infants, and on the maternal life?" The report made by a commission of the Academy, consisting of Orfila, Adelon, Villeneuve, Mérat, and Danyau, contained the following conclusion:—"Ergot of rye administered improperly causes death to the fœtus, and injury to the mother." The immediate source of danger to the fœtus is either the toxical property imparted to the blood, or the interruption to the circulation through the uterus and the placenta, occasioned by the long-continued contraction of the uterus. In this latter case the child may perish from asphyxia. These are the usual sources of danger; but there is a third. The long-continued and violent pressure to which the child is subjected during ergotic labour may compress the brain beyond the limit of endurance, or it may impede the circulation through the umbilical cord. The toxical agency of the ergot upon the fœtal heart is exemplified in the observation already referred to of Dr. Hardy. The influence of contraction of the womb in arresting the circulation through the placenta, and consequently the fœtal circulation, has been demonstrated to me by actual observation. The case is so interesting, and the opportunity of making a similar physiological experiment must be so rare, that I will cite it in detail.

Case 2. A woman, with an extremely contracted pelvis, and who ten years before had been delivered by craniotomy by Dr. Waller, consulted me about her condition. She was again pregnant. I became satisfied of the propriety of inducing premature labour; and the agent I determined upon employing was galvanism. Having waited until it was estimated that seven months of gestation had passed, the operation was commenced. I shall have to relate presently the course of the labour under the use of galvanism, and may therefore pass at once to the particular point it is my present wish to illustrate. When labour had set in, and the os uteri was partially expanded, the cord came down into the vagina. The pains being of a languid, uncertain character, the galvanic stimulus was kept up. The pulsations of the cord were strong, and 80 in the minute. Galvanism was applied during the pains; the contractions were sensibly increased in force, and during the contractions the pulsations in the cord became intermitting, and occasionally stopped. As the pain went off, and as the galvanism was discontinued, the pulsations resumed their former strength and regularity. I then tried the effect of galvanism in the absence of a pain. Contractions were induced, and the intermittence of the pulse followed.

I then observed the effect of a pain uninfluenced by galvanism. The intermittence of the pulse was the same. I repeated these observations several times, and always with the same result. Towards the termination of the labour a strong expulsive pain came on, during which, the head, which was very small, was driven into the vagina, without, however, causing any pressure upon the cord. During the strong pain the pulsation in the cord stopped entirely, but returned when the pain went off.

But fœtal circulation is arrested during the physiological contractions of the womb for a short time only, and is completely restored during intervals sufficiently long to ensure the safety of the child. In ergotic contraction the interruption is total, unremitting, and protracted. Shall we wonder if the child occasionally perishes from asphyxia?

Dr. Ramsbotham, whose experience in the use of ergot in inducing premature labour is probably greater than that of any other practitioner, says:—"After a great number of trials I observed that although the mothers recovered as well as if through an ordinary labour, their systems not being in any sensible degree injuriously affected by the drug, yet that the proportion of children still-born was greater

than when the membranes were punctured. This I attributed to the baneful influence of the medicine upon the fœtus." Dr. Ramsbotham modified his practice in consequence. He further says that "Wright's experiments prove decisively that the medicine has a most prejudicial influence upon the young *in utero*, even to their destruction."

If the child survives the perils of ergotic labour, is it free from subsequent danger?

Dr. Ramsbotham says: "It has happened to me in four different instances to witness the death of the fœtus, a few hours after birth, by convulsions, after the induction of premature labour by ergot."

These facts, which might be greatly multiplied, prove beyond a doubt that ergot of rye is capable of exerting the most deplorable and even fatal mischief both upon the mother and the child. It follows from this circumstance, the uncontrollable nature of its action, and the difficulty that exists in many instances of forming an accurate diagnosis, that the use of the ergot of rye in obstetric practice should be reduced within the narrowest possible limits. I believe that the restrictions to its use must be carried very much further than is generally prescribed. It is a matter of extreme doubt to me whether it should ever be administered before the child is born; and in cases of uterine inertia after delivery, accompanied with retention of the placenta or hemorrhage, it has been shown to be by no means free from objection. But the most effectual way of attaining the object I propose, of minimising the use of ergot in obstetric practice, is to show that we possess other means at once more safe, more effectual, and capable of successful application in all those cases in which the ergot has been recommended.—*Lancet, Nov.* 5, 1853, *p*, 433.

[Dr. Barnes, passing over all these slighter stimulants to uterine action such as restoring hope and confidence in the patient, pressure of the hand on the womb, application of cold, &c., &c. proceeds to consider the value of galvanism as a substitute for ergot.]

From time to time many valuable but isolated observations upon the use of galvanism in different cases of obstetric practice have been published. But no systematic attempt has been made to prove that in galvanism we possess an agent capable of universal application wherever we require a safe and effectual stimulus to the muscular structure of the uterus. I shall consider the uses of galvanism in the successive epochs of gestation and parturition, beginning with its use in the induction of premature labour.

The Use of Galvanism in the Induction of Premature Labour.—In 1803, Herder suggested the use of electro-galvanism for the induction of premature labour. In August, 1844, Drs. Horninger and Jacobi succeeded in bringing on labour by the electro-galvanic apparatus after other means had failed. The application was immediately followed by uterine action, and the child was born in an hour from the commencement of the operation. A successful case under the hands of Mr. Demsey is also referred to by Dr. Golding Bird. My researches into what has been written on the subject have not been sufficiently minute to enable me to say that no other similar cases have been recorded. In January, 1851, I myself had an opportunity of testing the efficacy of this agent.

Case 3. I have already referred to this case for the purpose of illustrating the effect of contraction of the uterus upon the fœtal circulation. The result, although perfectly satisfactory, was by no means so speedily accomplished as in the case of Horninger and Jakobi. I had previously endeavoured to bring on labour by puncturing the membranes, and inserting a sponge-plug in the cervix uteri. This proceeding was followed by no symptom of labour. On the 23rd of January I applied the galvanic battery for half an hour, placing one pole on either side of the uterus. Immediately after commencing the shocks the bladder was irresistibly emptied, to the evident annoyance of the patient. The womb was felt to become hard, and the patient herself was sensible of contractions and increased movements of the fœtus. The contractions did not continue on the cessation of the galvanism, and I therefore repeated the application on the 24th and 26th, for about an hour each time. On the 26th a "show" took place. On the evening of the 27th, slight pains were felt; the cord was presenting, a small loop coming through the os uteri, which was now dilated to the size of a shilling, but feeling rigid. She had had rather copious flooding in the day-time, but it had stopped. The head was felt lying on the pubes in front

of the os uteri, the cord coming down in the free space behind it. On the morning of the 28th, the galvanism having been applied at intervals all night, the pains had increased. I have already mentioned how the galvanism increased or originated contraction. At nine A.M. the child was born. It was apparently not more than six months old. The patient had certainly reckoned falsely. The child's heart was pulsating; the chest made three or four convulsive heaves, at which the mouth opened, but no air seemed to enter: the lungs refused to expand; the walls of the chest were drawn in towards the spine. I endeavoured to excite respiration by the galvanic apparatus, but, although I could at will cause a respiratory *effort*, the child was evidently too immature to live. The womb contracted favourably, and the placenta being withdrawn was found healthy. The patient recovered without a bad symptom.

The excellent effect of galvanism in this case led me to recommend the use of the same agent to my friend Mr. Mansford, who has favoured me with the following account:—

Case 4. "The lady, whose case led me to attempt the induction of premature labour, was in the 41st year of her age, and the thirtieth week of her fifth pregnancy. On the 8th of November, 1852, having ruptured the membranes, I introduced one wire of the apparatus within the os uteri, and placed the other in concord with the spine. From the one introduced into the uterus I had removed the brass handle, and twisted the wire upon itself so as to form a loop sufficiently curved to ensure its remaining steadily in its proper place. I also carefully enveloped a considerable portion of this wire with lint, as well to protect the vagina from the twisted portion and extremity, as to prevent the galvanic current from being diverted from the uterus. I then increased its power until it produced 'the most severe cutting pains in the loins,' 'great bearing-down,' and 'a dreadful commotion in the womb.' These were my patient's own expressions. The operation was repeated on the 9th and 10th, each morning for half an hour; the effect, however, had not been as yet altogether satisfactory, as I had not been able to maintain a continuous action; but on the fourth morning, viz., the 11th, I remedied this defect, and kept up a continuous current for three-quarters of an hour, when my patient begged me to desist, which I did, and determined to wait a few days to see if this would accomplish the desired effect. Happily on the 14th, without any further interference, labour commenced, and terminated within four hours, in the birth of a living child, and not a single untoward symptom occurred spontaneously. It was altogether a most satisfactory case."

The foregoing results are directly at variance with the opinion of Dr. Golding Bird, who says:—"The result I have arrived at is, that this agent, like the ergot of rye, and perhaps other *ecbolic* remedies, generally fails to develope uterine action *de novo*. . . .Hence, though I believe it will generally fail to induce premature labour, it will as generally succeed in stimulating the uterus to vigorous contraction after labour has actually commenced." In weighing this negative opinion, it should, however, be observed, that the latitude of qualification implied in the word "*generally*," deprives it of all precision of meaning.

It would lead me beyond my present purpose to discuss the relative advantages of galvanism and the douche recommended by Dr. Kiwisch, and other methods. I will simply remark, that whatever method be determined upon for the purpose of bringing on labour, the stimulating property of galvanism upon the uterus will be a most useful adjuvant.

I will briefly refer to the great superiority of this method over the use of ergot of rye. An unexpected obstacle to the expulsion of the fœtus may arise after the administration of ergot; there is, consequently, danger of rupture of the uterus. How, for example, can we foretell that the child will not be driven into the pelvis in a transverse position? Secondly, there is the great improbability that the child will be born within any reasonable period after the administration of ergot; many doses are required; there is the risk of ergotism to the mother; and the peril to the child rises in proportion to the amount of ergot given; moreover, it is extremely uncertain whether the ergot will act at all.

The Use of Galvanism in Inertia during the First and Second Stages of Labour.—I will now illustrate the effect of galvanism in lingering labour from uterine inertia. An interesting case of this nature is recorded by Mr. Cleveland, which was brought

to a close within fifteen minutes after the use of the electro-galvanic apparatus had been commenced. Mr. Houghton also relates four cases of arrested labour from atony of the uterus brought to a successful termination by the agency of galvanism. In three of these ergot had previously failed.

In a similar case I have myself experienced the like good effect, but I prefer citing the following account supplied to me by my friend Dr. Mackenzie:—

Case 5. "I was sent for one morning to a young woman who had been admitted in labour at the Paddington Infirmary, and on examination I found that the head presented. Although she had been several hours in labour, the os uteri was but little dilated. I saw her in the course of the same afternoon, but still found very little dilation. At ten p.m. but little progress had been made. I now determined to try the effect of galvanism, and applied one pole of a single-current machine to the spine, and the other, by means of Radford's director to the neck of the uterus. The current was from time to time intermitted, and uterine action of a vigorous character was excited. In about an hour a fine living child was born. So vigorous were the expulsive efforts during the passage of the head through the os externum, that I was obliged to take particular pains to prevent rupture of the perineum. The impression left on my mind by this case was, that galvanism should not be employed except very cautiously in primiparæ, or in any other instance in which the perineum is rigid or imperfectly developed."

Galvanism may also be usefully employed in many cases of hemorrhage before the birth of the child.

A judicious application of this agent may, in many cases of arrest of the head from inertia, obviate the necessity of resorting to the use of the forceps.

The Use of Galvanism in the Third Stage of Labour, and in Hemorrhage.—We possess a greater amount of evidence of the value of galvanism in the third stage of labour. Dr. Radford has contributed many valuable observations, exemplifying the power of galvanism in exciting contraction of the uterus in cases of post-partum hemorrhage. These are too well known to require to be cited. Mr. Houghton has added other cases which occurred under his own observation. The only instance I will adduce here is one which occurred recently to Dr. Mackenzie.

Case 6. "The patient had been upwards of forty-eight hours in labour, under the care of Dr. Keogh, who called in Mr. Clark, by whom I was sent for. When I saw the patient uterine action had entirely ceased, and I found, on examination, that the head was impacted in the pelvis, the face presenting with the chin to the left cotyloid cavity. As the patient was exhausted, an opiate had been given, and as she was disposed to sleep, we agreed to meet again in some hours, and if uterine action did not return, to deliver by the forceps. At the appointed time no return of uterine action had taken place. I applied the forceps; the operation was accomplished with extreme difficulty, and the woman was delivered of a fine, large, living child. I left the patient shortly afterwards, but the next day, on meeting Dr. Keogh and Mr. Clark, I learned that great apprehension had been felt throughout the night as to the occurrence of hemorrhage, inasmuch as the uterus had remained flaccid and uncontracted, and at the time of my visit it reached above the umbilicus, and was very soft and flabby. I proposed galvanism, and applied one pole to the spine and the other to the neck of the uterus, occasionally intermitting the current. This was done for half an hour, and evident uterine action was excited, the uterus becoming harder and smaller, and on removing the poles two large coagula were expelled. The next day the uterus was more contracted and smaller, and no hemorrhage had occurred. Galvanism was again used for half an hour. The uterus certainly contracted under its influence. The following day no hemorrhage had occurred, and the condition of the uterus was such as not to require any further recourse to the agent. The woman from this time recovered in a most favourable manner." Dr. Mackenzie adds the following remarks, in which I entirely concur:—"It appears to me that the results of galvanism in this case were highly satisfactory, because coagula retained in the uterus, from atony of the organ, are not only calculated to occasion hemorrhage, but by undergoing a species of putrefactive decay, to give rise to fever and all the consequences of vitiation of the blood. Under such circumstances, I have known the hand forcibly introduced into the uterus many days after labour for the removal of such coagula with very disastrous results,—results which this case shows may be obviated by having recourse to galvanism."

Other Uses of Galvanism in Obstetric Practice.—There is another case of not unfrequent occurrence in obstetric practice, in which galvanism may be of eminent service—temporary paralysis of the bladder following delivery. A case I have already related illustrates the power of galvanism in causing contraction of the bladder. Drs. Goodwin and Radford describe an interesting case, in which the catheter was employed two or three times a day, and could not be dispensed with. On Dr. Goodwin's suggestion galvanism was tried and *the first application proved successful.*

I would especially recommend the use of galvanism in those cases in which the action of the uterus has been unfortunately paralysed under the influence of chloroform. In such cases I believe no other stimulus that can be applied will answer with equal certainty or efficiency.

I am also sanguine as to the value of galvanism in exciting respiration in asphyxiated children.

There is another class of cases in which galvanism promises to be of the greatest service. A most interesting case has been recorded in which Dr. Tyler Smith was enabled to produce expansion of the neck of the uterus, and to bring an intra-uterine polypus into view, so as to admit of the application of a ligature, by the application of galvanism after ergot had failed. I have also employed it with success for the purpose of causing the expulsion of hydatids. This case occurred in connexion with my colleague, Mr. Forbes, and I will relate so much of the account as bears on the question before us.

Case 7. Ann W., aged 42, had had eight children and three abortions. She applied to Mr. Forbes on the 17th of June last, having anasarca of the legs. Two months before, she suffered a burning pain in the region of the womb. She had menstruated up to Christmas last. Since that date there had been a little hemorrhagic discharge at intervals. For the last month there has been a continual discharge of coloured fluid. Her health is much impaired, and her strength lowered. On the 18th, while in bed, she felt a vaginal discharge, and on getting up passed a large quantity of blood. The pulse was weak, thready, 108; face blanched; headache intense. No pain preceded the hemorrhage. There was a tumour in the seat of the pregnant womb, extending more to the right side, and reaching to the umbilicus; it was firm and elastic, tender on pressure, which did not bring on labour-pains. The os uteri was the size of a shilling, and rigid. No placental murmur or sounds of fœtal heart heard. The breasts were quite flaccid. Os slightly expanded towards the afternoon. A dead fœtus, or some diseased condition of the ovum was suspected. In consultation, Dr. Barnes suggested galvanism to cause contraction; this had the desired effect, and Mr. Forbes was enabled to bring down a bunch of hydatids. The vagina was then plugged, and the abdomen bandaged. The disposition to contraction thus given, more hydatids were afterwards passed. Tincture of ergot of rye was then given in small doses. Early on the morning of the 19th, the patient passed a large mass of hydatids, which was expelled suddenly with a pain like that of labour. She was quite exhausted with loss of blood and previous disease; symptoms of inflammation appeared, and she sank the same night. The post-mortem examination revealed a large fibrous tumour in the walls of the uterus, and an advanced stage of granular degeneration of the kidney.

In such a condition of the uterus and the patient, none of the ordinary means of exciting contraction could have been employed with equal safety and advantage. The necessity of inducing contraction to expel the contents of the womb and arrest the hemorrhage was obvious, and the utility of galvanism in accomplishing this was manifest. I am disposed to regret that the galvanism was not more freely used. The expulsion of the hydatid placenta might have been hastened.

It is beyond the strict scope of this paper, but I may be permitted to refer to the advantages attending the use of galvanism in amenorrhœa, hysteria, and other diseases of females, advantages which have been clearly established by Dr. Golding Bird, Dr. Gull, and others. The stimulating influence of galvanism is well worthy of trial for the purpose of exciting the lacteal secretion.

Mode of Applying Galvanism.—I have now gone through a series of illustrations affording evidence of the use and value of galvanism in most of the forms of labour characterized by defective uterine action, and in other cases where the indication is to excite the contractile property of the uterus. I will conclude this paper with a brief description of the mode in which this powerful agent should be applied, and a

summary of the advantages it especially possesses in obstetric practice over the ergot of rye. The ordinary electro-magnetic apparatus in use for medical purposes is, I believe, the best form that can be employed. The principle of this apparatus consists in the induction of magnetic currents by a current of electricity, and the production of a rapid succession of feeble shocks by continual interruptions to the current. I have observed that the uterine contractions are always provoked at the break and renewal of the circuit. Repeated shocks act as a far more effectual and certain stimulus to uterine contractility than a continued current. It is probably through inattention to this fact that some practitioners have failed in effecting contraction of the uterus by means of galvanism. As to the mode of applying the poles, I do not think it necessary to apply one over the spine, and the other to the neck of the uterus, as is usually done. I have found the application of the discs, covered with thin flannel moistened in water, one on either side of the abdomen over the uterus, much more convenient, and quite as effectual. The practice of applying one pole over the spine and the other to the neck of the uterus, further seems to me to be based upon an erroneous view of the mode in which galvanism acts upon muscular fibre. When the poles are thus applied, one to the spine and the other to the cervix uteri, it is doubtful whether the ensuing contraction of the uterus is due to primary excitation of the spinal marrow. It is proved by the experiments of Matteucci, and it is confirmed by general observation, that *galvanism acts directly upon the muscular fibre*, stimulating it to contraction. It is clear that this direct action can be as effectually obtained by passing the shocks through the uterus, by placing the poles on either side of the abdomen. I would not be understood to affirm that this immediate action of galvanism upon the muscular fibre is its sole mode of action, but that it is the primary and essential one: this primary peristaltic action commenced, the secondary and tertiary diastaltic, emotional, and voluntary reactions upon the uterus follow.* The duration of the application must depend upon the requirements of the case. It is often found that nothing but a primary excitation is wanted, and that this being supplied, the uterus will go on contracting spontaneously. In those cases where it is required to originate uterine contraction, as in the induction of premature labour, several applications of an hour's duration will be necessary. The uterus cannot be roused to perfect action before the appointed time without repeated stimulation.

The Special Advantages of Galvanism as an Agent for Producing Uterine Contraction.—Among the advantages of galvanism more especially worthy of attention are—

1st. The simplicity of the operation.

2nd. The extensive range of cases in which it may be successfully employed, rendering the electro-magnetic apparatus a desirable addition to the armamentarium of the obstetric practitioner.

3rd. The perfectly manageable character of the agent. Its action may be broken

* It will be seen, from what has been said above, that I cannot concur implicitly in the views or conclusions of Dr. Golding Bird expressed in the following quotation:—"In the magneto-electric coil in which currents are excited by repeatedly breaking contact by a vibrating bar, we have two currents moving in opposite directions, to each of which the patient is submitted. Now these currents are of unequal strength; and if the most energetic—that on breaking contact—be passed in the direction of the *vis nervosa*, it will produce painful contractions, which the moment it passes in the opposite direction, will become relaxed: for a direct current tends to produce contraction; an inverse current, paralysis. Hence, I should urge the accoucheur not to employ the apparatus in which both these currents are produced, but simply the single current machine. In using this, I would suggest the positive conductor to be placed over the lumbo-sacral region, and the other to be carried by gentle friction over the abdominal surface. In this way, powerful uterine contractions may be easily produced."

Are we, when we place the positive conductor over the spine, and the negative one over the abdominal surface, warranted in assuming that we are passing a current in the direction of the *vis nervosa*? Are we so much as warranted in assuming that we are acting upon the contractility of the uterus through the medium of nerves at all? Conclusions such as these should be based upon demonstration. Has the uterus been isolated from all surrounding textures, preserving only its connexions with the spinal and sympathetic nervous systems; and have the effects of passing a "single current" along the nerves in a centripetal and centrifugal direction been observed? No. But this has been observed:—that muscular fibre, both voluntary and involuntary, will contract under the galvanic stimulus when its relations with the nervous centres are severed altogether! The only legitimate conclusion from the known facts appears to be, that, whether the shocks of the single or double current machines be passed through the uterus in one direction or in the other, whether through the lumbo-sacral region and the abdomen or cervix uteri, or from side to side of the abdominal walls, the uterine muscular fibre is stimulated and will contract. The observations of Matteucci, upon which the reasonings of Dr. Golding Bird appear to be built, apply more especially to the effect of very feeble currents upon the motor and sensitive nerves of the spinal system and the voluntary muscles.

off and renewed at pleasure. The moment we think the uterus is acting too powerfully under its use, we may instantly withdraw the exciting agency, and leave the uterus to the ordinary physiological stimuli, which seldom impel the organ to undue activity. It moreover admits of easy regulation; both the strength and duration of this agent are completely under our command. We have it in our power to imitate in a remarkable manner the natural pains both as to intensity and intermission. Ergot has neither measure nor certainty.

4th. Its peculiar appropriateness and efficacy in cases of extreme exhaustion of the system, where deglutition is difficult or impossible, or where the stomach rejects everything; where any other mechanical application to the uterus is dangerous or inconvenient, and especially where the introduction of the hand into the uterus would be likely to be attended by injury or even a fatal result. Indeed, it may be truly said that in cases of extreme exhaustion, galvanism is the last resource left to us. The galvanic stimulus can be applied when everything besides is out of the question. The uterine muscular fibre will respond to this stimulus when the nervous system is utterly prostrate, when the heart has ceased to beat, when the patient is moribund or even dead.

5th. Galvanism is less exhausting to the system than ergot or most other means of exciting contraction. It acts directly upon the uterine muscular fibre, and scarcely taxes at all the general powers of the system.

6th. It does not necessarily preclude or supersede the use of other remedies tending to fulfil the same indication.*—*Lancet, Nov.* 12, 1853. *p.* 456.

Dr. Mackenzie bore ample testimony to the correctness of Dr. Barnes' conclusions. He himself had been for some time engaged in testing the use of galvanism in cases of uterine disease as well as in obstetric practice. He believed that there were four classes of cases in which galvanism might be usually employed—1st, for the induction of premature labour, as Dr. Barnes' cases proved; 2ndly, in the various forms of inertia uteri during labour; 3rdly, in placenta prævia: in this condition the blood which he believed escaped from the uterine arteries could in no way be so effectually restrained as by galvanism, which he believed would speedily develope the action of the uterus; 4thly, there was another series of cases, of various forms of passive hemorrhage and leucorrhœa. He related the case of a patient who had been delivered five weeks: for the first eighteen days she had been free from hemorrhage; hemorrhage had then set in; she became blanched, and exhibited evident marks of excessive loss of blood; this degenerated into passive hemorrhage. There was no disease of the cervix uteri. He applied galvanism; the hemorrhage stopped, and on the next day it had not returned; the application was repeated. He was confident that in galvanism we possessed an agent worthy of our further investigation.

[Dr. Wish considers ergot of rye to be the more powerful ecbolic agent, and much prefers its use to that of galvanism.]—*Lancet, Nov.* 5, 1853, *p.* 437.

142.—*Galvanism as an Obstetric Agent.* By Dr. Thomas Radford, Manchester.—[Dr Radford was first led to the use of galvanism in midwifery from observing its value in a case of atony of the bladder. He has used it]

1st. In cases of tedious labour arising from uterine inertia.

2nd. In cases of accidental hemorrhage, either before or after the rupture of the membranes, and especially when exhaustion from loss of blood exists.

3rd. In cases of "placenta prævia," in which the practice of detaching the placenta is adopted, and the vital powers are greatly depressed.

4th. In cases of internal flooding before or during labour.

5th. In cases of post-partum floodings.

6th. In cases of hour-glass or irregular contraction of the uterus.

* An apparatus which combines to the greatest extent, compactness, portability, and efficiency is an especial desideratum to the obstetric practitioner. I know of no instrument that possesses these advantages to the same extent as that of Mr. Hearder, of Plymouth. This instrument is well made, it does not occupy one-half the space of those usually sold, and whilst the maximum power is considerably greater, it admits by the most simple means, of *accurate and minute graduation*. This last quality, independently of its obvious utility in regulating the power according to the effect desired, is one which the scientific practitioner will appreciate as affording the means of comparing his own observations with those of others. *Further* improvements in this machine are being effected which will carry compactness to the furthest *extent*, and render it in every way admirably suited to the obstetric practitioner.

7th. To originate, *de novo*, uterine action, or in cases in which it is desired to induce permature labour.

8th. In cases of abortion, when the indications show the necessity, or justify the expulsion of the ovum.

9th. In cases of asphyxia in infants.

Galvanism is especially advantageous as a general stimulant in all those cases in which the vital powers are extremely depressed from loss of blood. Its beneficial effects are to be observed in the change of the countenance, restoring an animated expression; in its influence on the heart and arteries; in changing the character of respiration; and its warming influence on the general surface. I have several times observed, in cases in which other powerful stimulants have failed to produce any beneficial effects, the most decided advantages accrue after its application.

I have never observed that the child, in utero, has been injured by its use, which gives it a great advantage over the administration of secale cornutum, which, in many cases, is destructive of it. "This drug is liable to great deterioration; its operation is not always certain, its failure depending sometimes, perhaps, on its inert qualities, but frequently on a constitutional idiosyncracy which resists its powers. There are organic states which forbid its use: when the os uteri is undilated or undilatable, the child being still alive, it ought not to be administered. If in such a case it induces a powerful tonic contraction of the uterus, it destroys the child. We cannot control or confine its action, and therefore it is totally unsuitable to cases in which we only want a limited effect. Again, if exhaustion is an element in the case, it is wholly inapplicable, as we ought not to adopt any means which tend further to depress the vital powers. The powerful and sanitary influence of galvanism was most decidedly obtained in the preceding case," (referring to a case to which these remarks were appended), "and the great advantage of this agent is, that its effects may be carried to any degree, from first only exciting the uterus so to contract that its diameters are lessened, and that its tissue comes to be applied to the body of the child. These, however, may be at pleasure increased, so as to accomplish the expulsion of the child and placenta. The gradual changes produced upon the uterine tissues were admirably seen in the foregoing case, and also its great power developed by its continued application—to arrest the discharge, expel the child and the placenta, and leave the organ safe from the occurrence of post-partum flooding." —*Extracted from a case detailed in the proceedings of the local branch of the Provincial Medical and Surgical Association*, 1847.

In the above-named case I used the poles externally, and have before this, and ever since adopted this mode of application.—*Lancet, Nov.* 26, 1853, *p.* 500.

143.—ON THE USE OF CHLOROFORM IN LABOUR.

[At a meeting of the Royal Medical and Chirurgical Society, Dr. Robert Lee gave an account of seventeen cases of parturition, in which chloroform was inhaled with pernicious effects.]

He thought that a contemplation of the subtle action of this poison on the nervous system would have induced caution in its application to practice, but, on the contrary, the greatest levity had characterized its employment. Very soon after the discovery of its physiological effects the author was astonished and confounded by the announcement of its application to midwifery; and it was not difficult for him to foresee that rashness in its application and use would lead to most deplorable results, and he regretted to find that in this he had not been mistaken. It was not wonderful that women doomed to bring forth their offspring in pain and sorrow should seek to escape from the troubles of our race by means of this treacherous gift of science; neither could we feel surprise that the instances of women who were saved from the grievous pains of child-bearing, without bad consequences, should have for a time reduced to silence those unwelcome monitors who pointed to the possible evils of this new agent; but it did seem strange to the author that, amidst so wide-spread an experience as now existed of the noxious and dangerous effects of chloroform, it should be necessary for him to assemble the proofs of the havoc it had made. The two most serious effects produced by chloroform on women in

labour were, a languid and deficient contraction of the uterus, and a greater susceptibility to the risks that arise from inflammation and fever. With regard to the first, the direct testimony of his own senses convinced him that the action of chloroform did very manifestly slacken the uterine contractions, and in some cases had put a stop to them altogether. Of the second class of effects, the risks of the puerperal condition were much complicated; for to inflammation and fever must be added severe cerebral and nervous disorders. He had no doubt that the use of this noxious agent ought to be expelled from the practice of midwifery. In conclusion, the author observed that, though his opinions had been confirmed by conversation with the most discreet and experienced practitioners, yet he entertained grave doubts of the result of the present appeal to the good sense of the profession, when he considered the arts used to propagate a faith in this practice. It had become almost an extra-professional question. There was a systematic concealment of truth by physicians; appeals were made to the natural timidity of woman, and the most fallacious promises of perfect safety were boldly held out. Conceited or ignorant women of fashion made a pastime of this as of other quackeries, and the cause of science and humanity was placed in the hands of the most presumptuous and frivolous part of the community, while young and inexperienced mothers were decoyed to their destruction. If he had helped to rescue the medical profession from the dominion of a great and dangerous error, and had placed some restraint on an ignominious and disgraceful practice, the author would rest satisfied that this essay had not been written in vain.

Dr. Snow said that the expressions in the latter part of Dr. Lee's paper were to be regretted. He had great respect for Dr. Lee, and for the manner in which he carried out his views, but he could not agree with him as to the connexion between the chloroform and the unfavourable symptoms which had been met with in the case just related. As regarded the two cases in which the uterine action was said to have been altogether stopped by the chloroform, he could only say that he had never seen such a result from its use, and he considered that it must be extremely rare, if it ever occurred, when the agent was properly administered. In the fifth case headache and various symptoms of hysteria, which appeared on the third day after delivery, were attributed to the chloroform, but it was contrary to all that had been observed of this agent, whether administered in surgical operations, or in medical or obstetric cases, that any kind of illness from its use could come on two or three days afterwards. The effects of chloroform subsided much more rapidly than those of the older and less volatile medicines. A patient was generally as free from the influence of this medicine in an hour as from any ordinary dose of opium in twenty-four hours. He (Dr. Snow) had seen two cases where an hysterical young woman remained apparently unconscious for a day or two after taking chloroform, but this was not the direct effect of the agent; it was a symptom which was met with in such subjects from various causes. In the same patient (Class 5) Dr. Lee had recommended means for getting rid of the chloroform out of the system four months after it had been inhaled. Now, it was physically impossible that chloroform could remain in the system in the way supposed, and this lady was no doubt quite as free from chloroform at the time as Dr. Lee himself. In the tenth case some cerebral symptoms which came on eight days after delivery were attributed to the chloroform that had been inhaled; but, for the reasons he had stated, it was impossible that any symptoms coming on at such a distant period could be caused by that agent. There were three or four cases in the paper in which there was either puerperal mania or something that Dr. Lee thought approached to it. Now, we had no means of knowing whether or not this disease was more frequent in persons who inhaled chloroform than in others; but, if it should turn out to be so, it should be remembered that this agent was in most cases administered during labour at the particular desire of the patient, who had a more than usual dread of pain. These patients often had an unusual excitability of the nervous system, and might possibly be more liable to mania, under any circumstances, than others. In Case 13 the author had attributed puerperal peritonitis occurring three days after delivery to chloroform. Now, this disease depended on the inoculation of a morbid poison, or an infection, and was well known before the introduction of chloroform. Surgeons might just as reasonably attribute phlebitis, secondary deposits of pus, sloughing *phagedena*, and other diseases which occasionally followed operations to this agent,

but they did not do so. In the last case, where the patient only inhaled chloroform for half an hour, an attack of difficulty of breathing, which came on a fortnight afterwards, was attributed to chloroform although there could be no possible connexion between the circumstances. Dr. Lee had stated that there was no proof that the uterus contracted properly after the patient had inhaled chloroform; he said that this was a mere assertion: but there was the clearest physical proof that it contracted, in the fact of its expelling the placenta into the vagina, within a few minutes after the birth of the child, and in its remaining contracted in the form of a dense circumscribed tumour just above the pubes. He had often assisted the accoucheur by placing his hand on the abdomen immediately after the birth of the child, and had felt the uterus contracting. It was true that a full dose of chloroform would at any time suspend uterine action for a few minutes, or as long as it might be kept up, and this was of the utmost service in cases of an arm presentation. He (Dr. Snow) had seen chloroform of the greatest benefit in several such cases. He would mention one of them. He had lately been requested by Mr. French, of Great Marlborough street, to give chloroform to a poor woman who had been attended by a midwife. There was a presentation of the shoulder, the liquor amnii had been evacuated many hours, and the child was so wedged down into the pelvis, that Mr. French thought it would be necessary to eviscerate it. He (Dr. Snow) had told him that it would probably not be necessary when the chloroform was exhibited; and in fact, when the patient was placed completely under the influence of this agent, Mr. French was able to turn the child as easily as if the membranes had not been ruptured. The chloroform was then left off, and in two or three minutes after the birth of the child the placenta was observed expelled into the vagina. In a little time they were able to leave the patient in a satisfactory state. The child was dead before Mr. French was called to the case. Now, nothing could exceed the benefits of chloroform in this case; and if Dr. Lee had the great objection to narcotizing a patient which he expressed, he ought to be rejoiced at the introduction of chloroform, which would enable him to effect his purpose with so much smaller an amount of narcotism than when opium was used. If fifty or sixty minims of laudanum were given, the patient remained under its influence more or less for forty-eight hours, and whatever might happen, there was no removing its effects; whereas the effects of chloroform subsided in a very few minutes by merely discontinuing its exhibition. To produce an amount of narcotism equal to that caused by the quantity of laudanum he had mentioned would require the use of several ounces of chloroform. Dr. Lee had alluded to the deaths from chloroform in surgical operations, as forbidding its use in obstetric practice; but they had scarcely anything to do with the question; for, except in cases of arm presentation, it was not necessary to approach a degree of insensibility which would be dangerous if it were exceeded. It should be remembered that no death from chloroform had occurred in midwifery, and he only knew of one case where the patient was in danger, and that arose from gross mismanagement, for the husband was giving the chloroform, and looking another way. With regard to the use of chloroform in surgical operations, he believed more lives had been saved than lost by it. Nothing was more common than syncope during operations before its use, and syncope was not without danger in certain subjects; during the use of chloroform, however, syncope was rare. Many cases had occurred before the use of anæsthetics, where patients died suddenly during operations, or even when an operation was about to commence. He could not ascertain the number of these, but he thought they were not fewer than the deaths from chloroform, of which about thirty-five were recorded to have occurred in all parts of the world. Moreover, it was his opinion, that when this agent should be more generally studied, and greater care taken therefore in its use, the danger from it would be so extremely small, that it would be impossible to estimate it.

Dr. Merriman related a case in which, in consequence of labour progressing very slowly, he administered chloroform "deeply." The effect was such, that some hours after, on visiting the woman for the third or fourth time after the chloroform was given, he could find "no trace of a child." He was much alarmed, and sent for Dr. Chowne, who came immediately, turned the child, and delivered the woman. This patient had puerperal insanity afterwards, but recovered. The effects of this case upon his mind were such that he had scarcely ever used chloroform since. He

did not see much advantage from its employment even in cases where the forceps or even craniotomy was resorted to.

Dr. Chowne said that he concurred in the main with Dr. Lee, and he then entered at some length into the progress of chloroform as an anæsthetic agent. He alluded to the exaggerated encomiums with which it had been introduced into practice, and to the terrible effects it had in some instances produced. Indeed, to judge from a late report in 'The Lancet,' the exceptions urged against its use were so many, that it would seem that it should be excluded from practice. However this might be, there could, he thought, be no doubt that when given in large doses, chloroform did produce injurious effects. If used at all, it should be employed with extreme caution, but in his own opinion, it would be hereafter little resorted to. In Dr. Merriman's case the head had been first impacted, and then chloroform was given to relax the parts. It produced such an extent of relaxation, however, that the child receded completely, and on his first examination he (Dr. Chowne) was afraid that the uterus had been ruptured. Secale cornutum had been given ineffectually before he saw the patient, with the view of bringing on contraction. On the whole, he considered that the value of chloroform had not been fairly tested; there had been too much prejudice respecting it, and it was most important that we should pursue our inquiries into its virtues impartially.

Mr. Fergusson remarked that as the objections which had been raised to the use of chloroform, referred to by Dr. Chowne, were most of them deduced from surgical cases, he felt desirous, as a surgeon, having used this agent pretty extensively, to offer some observations upon the question under discussion. He might at once observe that he had seen no analogous cases in surgery to the seventeen which had been detailed in the paper read that evening. He would ask Dr. Lee to point out why it should happen that for hours, days, weeks, or even months, after the exhibition of chloroform in parturition, bad effects should result, when no such evils were ever observed after operations in surgery, however long and painful, and even when the patient had been kept under the influence of chloroform for half an hour or more, and had inhaled as much of the agent as Dr. Lee's patients had done? He (Mr. Fergusson) in his experience had never seen any such symptoms as those detailed coming on days after the use of chloroform; he had not seen secondary abscess, irritation of temper, &c., that he could attribute to chloroform. He doubted much, indeed, if in Dr. Lee's cases the evils were to be fairly attributed to the chloroform. With respect to the great prostration of muscular power which ensued from chloroform, such as was instanced in Dr. Merriman's case, it was only under such prostration that the surgeon interfered. But before that prostration, and during the time the chloroform was being administered, very different effects were observed. For instance, in cases of lithotomy, the water was expelled before the staff was introduced, and after its introduction there was a discharge of fæces, showing that muscular influence was at work, probably the muscles of the abdomen. Again, in reference to Dr. Lee's cases, it must not be supposed that they were all the cases in which chloroform had been employed in midwifery; there were probably thousands of instances in which it had been used, and we knew not with certainty of the amount of its evil effects; but, looking at the vast number of cases in which it had been employed, at all events the subject could not be regarded as a novel one. As a surgeon, then, he (Mr. Fergusson) did not see danger from chloroform, when used with care and caution; but, when used otherwise, evils undoubtedly might and did arise.

Dr. Lee, in reply, said that there was no resemblance between a surgical operation and the process of natural labour—between the expulsion of a living child from the uterus by the muscular contractions of the organ, depending upon the influence of the great nervous structures with which the walls are endowed, and the extraction of a decayed tooth from the jaw, a stone from the bladder, or the amputation of a limb. In natural labour, if the pains are strong and regular, women, in a vast majority of cases, are exposed to little danger, require no artificial assistance, and the function is only disturbed by interference. Mr. Fergusson had just stated that one of the principal benefits derived from chloroform in surgery is the great amount of muscular relaxation which it produces during operations. In midwifery, this great amount of muscular relaxation would produce the most mischievous results; it would, in fact, induce partial or complete paralysis of the uterus, as in the case *just related* by Dr. Merriman, and in several of the cases detailed in the paper read

that evening. A striking and fatal example of the same kind had occurred since the paper was presented to the Society. Only three drachms were used in the first stage of labour, but no proper contractions followed the expulsion of the fœtus, and the uterus remained uncontracted till the death of the patient some days after in convulsions. There were no symptoms of puerperal fever or local inflammation. "The uterus did not go down to the usual size, so much so as to give rise to the suspicion that there was another child, or some ovarian disease, but there was neither." Dr. Snow had related to the Society a case of arm presentation, where the uterus was so completely paralysed by the chloroform he exhibited, that Mr. French turned with great ease, the contractions before being so violent, that he had contemplated eviscerating the fœtus. Yet Dr. Snow affected to doubt whether chloroform and narcotic poisons impair the action of the uterus, and had expressed an opinion that in the cases he (Dr. Lee) had related in the paper, the sudden cessation of the uterine contractions after its use could not be referred to it. It was impossible to reconcile such contradictions, but they admitted of a ready explanation. He lately perused a letter written by a fashionable lady soon after her confinement, to a physician, which contained the following passage:—"Chloroform, à la reine, just a few drops on a handkerchief from time to time for the last hour; I found it a most indescribable alleviation, and that though never insensible." This was a correct account, he believed, of the way in which chloroform was administered by Dr. Snow in natural labour, and it would account very satisfactorily for his assertion that the uterine contractions were little, if at all, impaired by it. Fifteen drops sprinkled upon a handkerchief, and the lady now and then permitted to sniff a little of the vapour from the corner in the last hour of labour. If he (Dr. Lee) might be allowed in plain language to characterize this proceeding, he would say that the whole was a mere pretence, and calculated only to deceive the weak, ignorant, and credulous. The anæsthesia from chloroform, of which Mr. Fergusson had spoken, and which was usually, as he understood, the result in midwifery, was quite another affair from the "chloroform à la reine" of Dr. Snow. Last week he saw a surgical operation performed upon a young woman, to whom six drachms had been administered. Her pupils were widely dilated, the breathing stertorous; there was foaming at the mouth; the pulse was rapid and feeble, and there were convulsive twitchings of the muscles of the extremities. No man in his senses would venture to reduce a woman to such a frightful condition in natural labour. In surgery it might be considered justifiable, but in midwifery it was wholly unjustifiable. Dr. Gream had stated that two ounces of chloroform might be given with safety in cases of natural labour, and though he admitted that it decidedly had the effect of diminishing the strength and regularity of the uterine contractions, yet still its influence might be so managed as to prevent the progress of labour being interfered with. If Dr. Gream would stand up in the face of the Society and state how chloroform could be so managed, he (Dr. Lee) would immediately sit down. (Dr. Gream here expressed his dissent, but Dr. Lee affirmed that this statement had been published by Dr. Gream in his last pamphlet.) In forceps cases (continued Dr. Lee), and in all the great operations of midwifery, chloroform could procure nothing but mischief, for in all these cases consciousness was the great safeguard of the patient. No forceps cases—and he had had as many as any person in that Society—were so unmanageable as those in which the consciousness was lost from puerperal convulsions, where the patient could not be held in the same position for any length of time. In uterine hemorrhage, and in all cases of protracted labour, from whatever cause, nothing but mischief could result from the use of that narcotic poison. The exhibition of chloroform in labour he held to be contrary to the sound principles of physiology and morality. "In sorrow shalt thou bring forth children," was an established law of nature—an ordinance of the Almighty, as stated in the Bible, and it was in vain to attempt to abrogate that law. There could not be a doubt that it was a most unnatural practice to destroy the consciousness of women during labour, the pains and sorrows of which exerted a most powerful and salutary influence upon their religious and moral character, and upon all their future relations in life. But he might put aside all these physiological and moral considerations, and rest his objection to the use of chloroform in labour upon the danger of introducing a subtle narcotic poison into the system at such a time. When only one drachm was given, who could be certain that it should not instantaneously be followed by the death of the person to whom it was adminis-

saved? Upon this point the whole question might be allowed to hinge.—*Lancet, Dec. 24, 1853, p. 608.*

144.—PREMATURE LABOUR ARTIFICIALLY INDUCED BY ERGOT OF RYE IN THREE INSTANCES.

By Dr. Francis H. Ramsbotham.

[The first case was the sixth pregnancy of the patient. In her first labour craniotomy had been resorted to. In the second the child was premature. In the third, delivery was effected with difficulty by the long forceps. The fourth, fifth, and sixth are recorded below.]

On Monday, Nov. 14, 1853, at three p.m., this lady, being between thirty-four and thirty-five weeks advanced, began to take the following preparation of ergot, for the purpose of inducing labour prematurely.

℞. Secalis cornuti recentis in pulverem redacti ʒiij.; aquæ fervent. ℥ vj.; infunde per semihoram in vase leviter clauso, et cola.

℞. Infusi suprà prescripti, ℥ vss; acidi sulph. dil. ʒss.; syrupi ʒij.; tinct. cardam. c. ʒij. Misce, sumat partem quartam 4tis horis.

On the afternoon of the 15th, she had taken seven doses, without any apparent effect. The os uteri was thick, hard, and high; it would just admit the tip of the finger. As the medicine had been procured at a small shop in the neighbourhood, and as it had neither the taste nor appearance of infusion of ergot, I desired the prescription might be taken to a larger and better known establishment, where there was greater chance of obtaining a fresh and efficient drug. On Wednesday, the 16th, at three p.m., she complained of an uneasy sensation in the back, which had teased her all night, but had not prevented sleep. The os uteri was dilated to the size of a shilling, much softer, though still thick. At the same time, on Thursday, the 17th, the os uteri had acquired a diameter the size of a half-crown piece, was considerably thinner, and quite soft. The pain in the back had much increased, and she had not slept since three a.m. The membranes became tense while I was making an examination, and I could have ruptured them by my finger very easily. On Friday, the 18th, at 3·30 p.m., the disc of the os uteri was larger than a crown-piece, quite thin, and very soft; there was decided intermittent action, and the membranes were protruded downwards with each return of pain. She had not had any sleep since half-past one, and there was a frequent inclination to pass urine. I ruptured the membranes without difficulty. Uterine action was established regularly at six p.m., and at two a.m. the pains became forcing. I arrived at her house at four a.m., and found the uterus acting very powerfully, and almost incessantly. A great part of the head had passed below the brim, the base of the skull being still above. It was expelled through the upper strait slowly and with difficulty, and the child was born at half-past four, alive. The placenta was projected into the vagina in ten minutes. The child had the appearance of an eight months' fœtus, though this was scarcely to have been expected; for the last time the catamenia appeared, they ceased on March 12th. This patient had continued to take the medicine as first prescribed, till the membranes were ruptured on Friday the 18th; and, besides the first seven doses, which seemed to have been prepared from an inert and useless drug, she took eighteen, or, in other words, the infusion from nine drachms of the grain. The next day she was as well as she could be so soon after labour; and she has continued to progress satisfactorily without a check. She is nursing her infant, which is thriving well.

Case 2. On May 21st, 1851, the same lady began to take the ergot in the same form, for the same purpose, being about eight months advanced in pregnancy. She took a dose every four hours; every fresh dose after the first two or three produced intermittent uterine action, which went off before the time arrived for the next. At two p.m., on the 22nd, the os uteri was somewhat open and softening. At two p.m., on the 23d, it was dilated to the size of a crown, the pains being regular and strong. I ruptured the membranes, and ordered the medicine to be discontinued. I was sent for at half-past six p.m. The uterus was then acting powerfully and expulsively; the os uteri being entirely dilated. The child was born at 7·15 alive, the head having passed with some difficulty. The placenta was expelled speedily. Her recovery was rapid and satisfactory. She took twelve doses.

Case 3. On September 3rd, 1849, I gave the same patient the ergot for the first time to induce premature labour. She took it in the form already mentioned. At two p.m. of the 4th the os uteri was thick and rigid, but admitted two fingers easily. At half-past three p.m. on the 5th it had acquired the diameter nearly of a crown-piece, and was soft. There was decided uterine action, though it was not powerful. I ruptured the membranes, and had scarcely left the house, when strong and regular labour-pains set in. At half-past four p.m. I was sent for, but not being in the way, a friend of mine went in my stead. He found the head on the perineum, and the child was born living at 4·45, an hour and a quarter after the membranes were broken. Her convalescence was uninterrupted. All her three former children are strong, hearty, and ruddy, and the infant is, as I have said, also healthy. There can be no doubt that in these three cases the ergot originated uterine contractions: and in my lecture on this subject, published in the 'Medical Gazette' for June 28, 1834, I have cited at length six instances where labour followed the exhibition of this drug, no other means having been had recourse to. Since that date a number of cases have come under my notice, where the same results have been obtained by the same means. Below is subjoined a table of 55 cases in which the ergot was used by me with that object, and another of 36 where labour was induced by puncturing the membranes. It will be seen that when the ergot was used, in 5 cases the child was born a quarter of an hour after the membranes were ruptured; in 3, between a quarter and half an hour: in 4, between half an hour and one hour; in 4, between an hour and one and a-half; in 3 between an hour and a-half and two hours; in 6 between two and three hours; and in 3, between three and four hours; so that of the 55 cases, in 28 the children were born within four hours, and of these, 12 within one hour from the time of the membranes being ruptured.

The longest time that elapsed between the rupture of the membranes and the child's birth was 136 hours, and there were six cases in which the period exceeded 100 hours.

In the 36 cases where the medicine was not given, the shortest time between the puncture of the membranes and the birth was 10¼ hours, and the longest 163; in eight cases it exceeded 100 hours. But if, for the purpose of contrast, the eye is run over the columns headed "Hours after the membranes were punctured," the difference in the time that elapsed in the two series of cases between the breaking of the membranes and the child's expulsion will be immediately and clearly evident; the whole number of hours in the 36 cases where the medicine was not administered, summed up together, being 2642 hours 30 minutes, an average for each case of nearly 74 hours; while in the 55 where the medicine was given, the aggregate amounted only to 1462 hours, an average of somewhat more than 26 hours.

It is generally acknowledged, that the longer the interval that elapses between the evacuation of the liquor amnii and the child's expulsion, the less chance is there of a live birth, owing to the continued pressure that must be exercised on its body, or on the vessels of the funis, or on those of the placenta; therefore any means by which this interval can be lessened is likely to add to its chance of safety. Irritating the os uteri by passing the extremity of the finger around it internally, the introduction of a sponge tent within the circle of the uterine mouth, and allowing it to remain there, that it may forcibly distend the aperture as it swells from the imbibition of moisture, galvanism, and the injection of warm water into the uterus, have all been had recourse to with the same intention,—that of exciting uterine action, and, at the same time, preserving the bag of membranes entire. It appears to me, that no means yet devised is of such easy application, and, moreover, is liable to so few objections as that which I am advocating; but to establish the latter point, we must first determine whether the medicine can always, or at least generally, be relied on for the object in view,—whether it can be given in sufficient quantity to insure that object without injury to the mother, and whether it is equally innocuous to the child.

[Then follows a very interesting table of 55 cases which illustrate the effects of this medicine, and corroborate the above opinions and practice of Dr. Ramsbotham. From these cases he thinks the following principles may be deduced.]

First. The medicine, though given in tolerably full doses, and continued for a

considerable period, produced in no one instance any injury to the woman's health, or other bad effect upon her system. Many of the patients, indeed, took more than twenty doses, at the intervals of four or six hours; one took forty-eight, and another sixty. Vomiting was induced in a few instances, and, in many, the pulse became depressed under its influence, unless when excited by the exertion of labour. All the patients, except one, recovered as well as if they had gone through the most natural labour; and the death of that one was by no means attributable to the drug, for it did not appear to act in any way, either on the uterus or more generally. The os uteri in that case was perfectly close at the time the membranes were punctured; and, when dilatation took place, the shoulder was found at the pelvic brim; version was impracticable, and delivery was accomplished by decapitation. The operation was performed 136 hours after the evacuation of the liquor amnii, and the patient died in eight days from pelvic inflammation.

Secondly. In by far the greater number of cases uterine action was decidedly initiated by the drug. The analysis above set forth clearly proves this to have been the case.

Thirdly. It seems demonstrated by the table, that the ergot does exert, in some instances, a prejudicial influence over the fœtus in utero, provided it is given in sufficient quantity; and provided, also, the mother's system is susceptible to, and is brought under its specific action; for of the 55 children born after the administration of the medicine, though 33 were born alive, 5 died in convulsions speedily after birth. Now, in this country, the death of an infant in convulsions within a few hours of its birth is a very rare occurrence; and if we take into consideration the well-known fact, that in those countries and seasons when ergotisme has raged as an epidemic, convulsive seizures, as well as gangrene of the extremities, have been a very common—nay, almost constant—symptom, we cannot withhold our belief that the deaths of these children so soon after their expulsion can be fairly laid to their having imbibed the poison of the ergot while in utero, and its continuing to produce its baneful effects upon their organization, and to develope its especial influence even at a time when they were no longer subject to its immediate operation. And this idea is strengthened in my mind by the fact, that in many of the 22 cases of still-births the mothers declared to me that they were quite sensible of the moment when the fœtus within them ceased to exist, on account of the sudden suspension of strong convulsive movements on the part of their infant, to which they had for some time previously been subjected.

Fourthly. I can state as a universal principle—though, this, indeed, does not appear from the table—that whenever the medicine fails to produce uterine contractions, it is equally innocent in respect of any deleterious effect on the economy of the fœtus.

And lastly: When the ergot is used, presuming that it exerts and renders manifest its specific influence over the uterus, it would appear to be the best practice not to persist with the medicine until the time when the child is on the point of being born; but rather to give only eight or ten doses, and to desist from its use whenever the os uteri has acquired the diameter of half-a-crown or a crown piece; the membranes may then be ruptured, provided the uterine orifice is soft and thin, and the vagina lax, as is usually the case under these circumstances. This counsel is tendered, because, should the uterus continue to contract, the mouth being to a certain extent dilated and thinned, will soon give way to the pressure of the head, and the child will be expelled in a comparatively short time. By acting in this way, prolonged compression on the funis and placenta will be prevented, while, at the same time, the quantity of the medicine taken by the mother will not have been sufficient to occasion any injury to the child's health, in the generality of cases.

That uterine action does not always follow the exhibition of the ergot, when given to induce labour, I am quite prepared to admit; for, although usually successful, I have sometimes been disappointed in my expectations. Thus in Case 6 of the first table, about 60 doses were taken, and 31 hours elapsed from the time the membranes were punctured to the child's birth; in Case 7, 20 doses were taken, and 114 hours elapsed; in Case 22, 12 doses, and 55 hours; in Case 39, 12 doses, and 83 hours; in Case 40, 15 doses, and 108 hours; in Case 42, 12 doses, and 111 hours; in Case 43, 9 doses, and 203 hours. In all these cases, the os uteri was thick and rigid; in none was it dilated to a greater extent than the size of a shilling when the

membranes were punctured; and in Case 39 it was quite close; so that, if the medicine produced in them any effect at all, it was to a very trifling extent.

This may be explained by the fact, that some women seem to be insusceptible to the peculiar action of the ergot, as some constitutions are insusceptible to the peculiar action of mercury; while others appear to be most easily brought under its power.

Another sure source of disappointment—and I myself think a very frequent one—is to be sought for in the grain itself. It soon loses its virtue by keeping, and when stale it becomes perfectly inert; nevertheless, I have found the infusion of the fresh grain more efficacious than any of the tinctures or other preparations kept ready for immediate use.

As might have been expected, in bringing on labour by the ergot, we have the same disadvantages to contend with, in regard to the preservation of the child, which embarrass us when the same object is sought by any other method. The woman may have miscalculated the period of her pregnancy; she may suppose herself further advanced than she really is; and the child, when born, may either be actually not *viable*, or so immature as to be reared with difficulty; or, again, she may have exceeded the date she imagined, and the fœtus may be too large to pass through the pelvis unmutilated. Thus, of the ninety-two children in the two tables above, (there being one case of twins,) five were delivered by craniotomy, the patients having been allowed to go beyond the time when the head would traverse the pelvis whole.

But the most frequent cause of disappointment will be met with in the position of the child. It is a well-established fact, that "cross-births" are much more frequent, comparatively, in premature labours, whether spontaneous or artificial, than in full-timed pregnancies. For instance, in thirty-four instances given by Dr. Merriman, in which premature labour was induced, fifteen of the children presented preternaturally, and only one of these was saved; and of the ninety-two children in the foregoing tables, thirteen presented with the breech or lower extremities, and six transversely; making nineteen preternatural presentations. The increased danger which the child must incur when any other part of its body than the head offers itself, will be acknowledged by every one who has paid the least attention to this subject.—*Med. Times and Gazette, Jan.* 7 *and* 14, 1854, *pp.* 8, 33.

145.—*Proposal for the Effectual Cure of Prolapsus of the Pelvic Viscera and Lacerated Perineum.*—By JOHN HILTON, Esq., F.R.S.—[There are scarcely any diseases of a more wretched character and so little under medical influence as prolapsus of the uterus, bladder, or rectum. The following ingenious surgical treatment by Mr. Hilton, deserves every consideration. The theory of the operation and the mode of operating are thus described by Mr. Hilton, in a letter to Dr. Lever. He says:]

I certainly think the cases of lacerated perineum are worth publishing, and I have great pleasure in sending you a statement of the reasons which induced me to adopt the operation performed in each of the cases. As far as I know, such an operation had not been done before that period, 1848, with the purpose of relieving the distress and annoyance to which these patients were exposed; but in this opinion regarding the originality of the operation I may be wrong, if so, your better information will set me right.

When you requested my assistance to determine what had best be done in a surgical direction, remembering that the levatores ani have one firm and fixed attachment to bone near the arch of the pubes, and another at the coccyx, and that the external sphincter ani might be regarded anatomically nearly in the same light in relation to its effects upon the injury to the perineum, and bearing in mind that all muscles contract towards their more fixed point, no matter how that fixity of position may have been acquired, it occurred to me, if I could by a simple and uncomplicated operation, disengage the coccygeal attachments of the levatores ani, I might allow them to retract the anal aperture and adjacent structures in a direction towards the pubes, as it were, to bury the perineal injury deeply in the pelvis, thus enabling the lower fibres of those muscles (which blend with the muscular parietes of the vagina, rec-

tum, and perineum) to assume the office of a sphincter to the lacerated opening, by approximating the edges of it, and drawing it upwards towards the pubic arch. In reference to the external sphincter ani, I concluded that, by taking away or separating the coccygeal fixed point of that muscle, I should necessarily change the direction of its contractile power from the coccyx towards the vagina, and thence to the pubes; this I hoped would help to occlude the lacerated opening between the vagina and rectum. Whether I had reasoned rightly or not, the results were as satisfactory, and indeed more so, than I had anticipated. It seemed to myself, that two ulterior purposes might be held in view by such an operation; the first was to ascertain how much of complete relief could be afforded by an operation which promised to be altogether free from both the danger and the severity of the ordinary operation for such cases; and secondly, should no important immediate benefit be derived, it would certainly tend to the advantage of the patient, by putting the parts into a better state (by relaxing them, and so taking off tension) for the easy and perfect accomplishment of the usual but more formidable operation of paring the edges of the lacerated wound, and maintaining them in contact for a time by sutures.

The method of proceeding was as follows:—A narrow sharp-pointed knife was introduced through the skin on one side of the point or free extremity of the coccyx, about half or three-quarters of an inch from its end; it was then passed into the pelvis, between the concave surface of the coccyx and the rectum, special care being taken not to puncture the intestine; the cutting edge of the knife was now made to sweep over the sides and ends of the coccyx, so as to separate from it the coccygeal attachments of both the sphincter and levatores ani; the knife was then withdrawn through the same small opening by which it had been introduced; scarcely any blood escaped at the wound, but a compress of lint supported by adhesive plaster was applied over it to keep the parts quiet, and to intercept the flow of blood.

That the operation had accomplished its intention of detaching the muscles from the coccyx, was obvious enough, by examining with the finger upon the skin, the median line between the end of the coccyx and the posterior margin of the anus, the resistance which the muscles naturally give to pressure in that position had disappeared, and the anal aperture became restricted or drawn up into the pelvis.

During the time I had the opportunity of seeing the patients after the operations, I have no hesitation in saying they were much benefited by what had been done for them, so much so, that no further treatment was deemed necessary. How far the operation may have succeeded ultimately and persistently, I do not know.—*Guy's Hospital Reports.—Monthly Journal of Med. Science, Feb.* 1854, *p.* 164.

146.—ON THE LOCAL APPLICATION OF THE VAPOUR OF CHLOROFORM IN UTERINE AND OTHER DISEASES:

AND DESCRIPTION OF AN INSTRUMENT USED FOR THE PURPOSE.

By Dr. S. L. Hardy, Examiner on Midwifery to the R. C. S., Ireland.

[There are circumstances which prevent us in some cases from administering or inhaling chloroform, and there are also cases where local applications of it, as commonly prepared, are useless—such as the ointment and liniment. To provide for these emergencies, Dr. Hardy has proposed, where we wish a local effect to be produced, to apply the vapour of chloroform, and for the effecting of this purpose he has invented an ingenious instrument. It will at once be evident that to no class of diseases will the value of this manner of application be so great as in that of diseases of the womb.]

Many of the diseases of females are not only exceedingly painful in their nature, but are rendered very difficult to treat, owing to a highly sensitive state of the nervous system. Pain may be most severe, but, to give relief, the evil effects of opium prevent its more frequent use: therefore other remedies less likely to cause those unpleasant consequences are prescribed. Instance, for example, cases of carcinoma of the uterus, in which, when pain becomes severe, opium must be resorted to. What is the state of the patient under its use? Ease is obtained, and perhaps rest in sleep, both most necessary and indispensable; but, on the other hand, extreme nervousness, headache, loss of appetite, constipation, and a host of ills, are ushered *in or increased by it.* Or, if it be a case of pain or irritation, as in dysmenorrhœal

patients, here again opium is not resorted to if it can possibly be avoided, for many of the reasons already mentioned; but other remedies whose action, though milder, is less likely to disturb the nervous system, already too much excited, are mostly directed,—as camphor, extract of hyosciamus, hop, &c.,—yet whose soothing effects are frequently very slow in producing the desired ease and comfort for the sufferer. In such cases, if the local application of the vapour of chloroform succeed in future trials, as it has already done, most immediate and very comfortable relief may be expected from its use.

The first effect produced by its application is a sensation of heat, which some complain of more than others, but which in a very few minutes is not referred to, as it is either more easily borne or soon subsides. If much uneasiness is expressed on account of it, the action of the instrument may be suspended for a little, or its effect diminished, which is all that is necessary. When applied per vaginam, on account of pain in the loins and sometimes over the pubes, arising from uterine irritation, immediately after the sensation of heat is felt from the presence of the vapour, the pain subsides, first in the back, then in the pubic region.

I have met with but one case in which chloroform, applied in this manner, did not remove pain; but in this instance the uneasy sensations were confined to the uterus, or felt per vaginam, and at the time the os uteri was very irritable on account of excoriation, which might account for a greater degree of heat than usual being experienced from the vapour.

The relief afforded by the local application of the vapour of chloroform is not of a very transient nature. In every instance in which pain was removed by it there was no return for several hours, and then in a very mitigated degree. In the intervals great comfort was usually felt. Patients who previously had taken opium, as in Case 1, preferred chloroform, as it caused no unpleasant sensation in the head next day.

The apparatus for applying it consists of a small metallic chamber; to one end of this a gum-elastic bottle is attached, to the other, a pipe furnished with a valve. On the end of the chamber there is also a second valve to admit atmospheric air for the working of the instrument. In order to charge it with chloroform it is necessary to unscrew the stopper in the side of the chamber, within which a piece of sponge is placed for holding the fluid.

The quantity poured in should not be more than the sponge will absorb, otherwise, instead of vapour, fluid chloroform will be thrown against the affected part. When charged, the vapour may be conveyed to the part requiring its application by any convenient pipe, if closely fitted to the one on the instrument, pressure being made on the elastic bag to produce expulsion of the vapour.

In proceeding to the consideration of some of the cases in which the vapour of chloroform was used by me locally, the first disease presented to the reader is so well known as an exceedingly painful and distressing affection, that it requires no comment. Valuable indeed would that remedy be which in such a complaint could hold out the hope of affording relief during the often long and torturing existence of many who are the victims of this sad malady. Allusion having been already made to the use of opium in the treatment of it, sufficient has been said to prove, that if, even for part of the duration of this complaint, it could be dispensed with by substituting the vapour of chloroform, this remedy is well deserving of a trial. In the present case it has been found most useful. Pain has been removed by it in fully as short a time as it could have been by inhalation, without the smallest uneasiness to the patient, who, as is stated in the case, was so perfectly relieved that she fell into a quiet sleep, and had an excellent night's rest, and this not on one occasion only.

Case 1. Mrs. L., aged 45, a very large, strong-looking woman, weighing about eighteen stone, the mother of seven children, the youngest five years old, had frequent attacks of uterine hemorrhage at irregular periods, which she supposed to be menorrhagic, as her regular menstruation, she said, had not ceased when those irregular hemorrhagic discharges began. Little notice was at first taken of them, but as they resisted the means adopted by her medical attendants, it was deemed necessary to have the uterus examined, for which purpose I was called to see her on the 19th of January, 1853.

I learned that, besides hemorrhage, she had in the intervals a most offensive muco-

purulent discharge; there was a sensation of burning experienced in the loins, the bladder was more or less irritable, and the bowels were generally confined, the alvine dejections being of an exceedingly dark colour, and looking as if streaked with blood: altogether she felt nervous to the greatest degree, and had become remarkably pale and weak from hemorrhage, which was not only frequent in its returns but very profuse.

On examination with the finger, the uterus felt extensively affected by carcinoma; ulceration had destroyed the cervix to a great extent; the edges of the ulcerated parts were most exquisitely tender to the touch, sharp and severe pain being complained of from the gentlest pressure of the finger.

Under the use of astringent and soothing lotions, cupping over the loins and sacrum, with tonics, &c., given internally, the hemorrhage ceased, and only returned at long intervals, and mostly owing to some accidental circumstance, such as a drive on a rough car, violent mental emotions, to which her exceedingly nervous temperament made her peculiarly liable, or awkwardness on the part of her nurse in using the syringe when injecting lotions. The sensation of heat in the loins was also relieved in the course of a few days, and only troubled her occasionally; constipation of the bowels invariably increased her sufferings, and if unrelieved by aperient medicine frequently caused a recurrence of the hemorrhage. At this time she did not suffer much, nor had she the characteristic pains of carcinoma until the month of May. In order to obviate the necessity for giving opiates, when pain became severe, various remedies were resorted to, such as tincture of Indian hemp, camphor and extract of hyosciamus, chloroform in draughts, cupping over the loins and sacrum, tepid hip-bath, &c. A drachm of chloroform and a scruple of camphor, mixed with an ounce of white wax ointment, to which was added occasionally a drachm of extract of belladonna, when rubbed over the loins, either after or without the use of the hip-bath, gave very great relief, and was exceedingly grateful to her.

Gentle exercise, by driving in the open air, improved her appetite very much, and tended towards obtaining comfortable sleep for her at night. At length the pains became so severe that the morphia draughts were frequently required. I now resorted to the local application of the vapour of chloroform, and with the most satisfactory results.

When the vapour douche of chloroform was used for about two minutes the finger could be moved freely over the edge of the ulcerated uterus without causing the least degree of pain, which never was the case before. The patient said she had a feeling of warmth or heat during the action of the vapour, which was soon succeeded by a numb sensation.

The first time that pain required the chloroform to be applied the suffering was perfectly removed in a few minutes, and the relief was so great that, on withdrawing the instrument, she fell into a most refreshing sleep, and had an excellent night's rest. It is now always resorted to when the pain must be quieted, and is very much preferred by the patient for that purpose to the morphia draughts, as she says her head is free from uneasy sensations the next day, which is not the case when she takes morphia.

For the following cases, Nos. 2 and 3, chloroform vapour seems to be particularly well suited. Before making a trial I had expected good results from its application; but the rapidity of its action in giving relief in each, and the permanency of the cure afforded in Case 3, exceeded my hopes very much. It is deserving of notice that in Case 2 the duration of the menstrual period was much lengthened, from which circumstance it may be inferred that the application has not only the effect of saving the patient from her usual degree of suffering, but, by subduing the spasmodic action of the uterus, tends towards the production of a more natural secretion. As yet I have not had an opportunity of testing its efficacy thus in the patient of Case 3; it is her intention, however, to resort to its use when next about to menstruate, so that at a future time the results may be laid before the reader.

Case 2. Miss R., aged 25, was for some months under treatment for disease of the uterus before coming under my care.

When I first saw her on the 13th September, 1853, she informed me that the ulceration which had affected her womb was for some time healed (which statement was verified by examination), and that she now suffered from very intense pain in that organ, which seized her every morning on awakening, and continued more or

less during the day, accompanied by painful sensations in the lower part of the back. Menstruation was regular in its return, but its approach was attended with very severe pain, the secretion was very scanty, and continued but for one day only. Her appetite was not good, and she was exceedingly nervous and weak.

Part of the treatment I adopted with this lady was the application of the vapour of chloroform to the uterus, which she was able to do herself. A very few days had passed when she told me the vapour always relieved her, and she felt improved under its use, and when applied at night going to bed she had the pain much less severe next morning.

On the 19th she had the sensations usually experienced on the approach of menstruation, which on former occasions were, as already noticed, exceedingly painful, but at this time she resorted to the chloroform vapour, which had the effect of rendering her perfectly comfortable, and the secretion, which usually lasted for but one day, now continued for three.

Case 3. Mrs. F., aged 25, a strong-looking woman, first came under my care on the 23rd of April, 1853. Shortly after marriage, which took place three years before this date, she aborted; since then she did not again become pregnant. Menstruation, both before marriage and to this time, was always very painful; the discharge scanty, and dysmenorrhœal membrane frequently expelled.

For the last two and a half years her health and strength very much declined, and she suffered from severe pain in the back and uterine region, attended with leucorrhœal discharge. On examination by the speculum excoriation of the os and cervix uteri was discovered, which soon got well under the treatment adopted.

On the 15th of September she again consulted me on account of a return of the severe lumbar and uterine pain which had troubled her for some time past, but on the day previous to her coming to me was so excruciating, and accompanied by so much pain in her breasts, that she thought it impossible she could have borne it. This day the pain in her breasts was better, but in other respects she suffered nearly as much as on yesterday, from pain in the pubic and uterine regions, and back. The uterus was tender to the touch when examined by the finger internally, but no abrasion of the os or cervix was discovered by the speculum. The vapour of chloroform, locally applied by the anæsthetic douche, had the most immediate and happy effects. In no case that I have met with did relief so instantly succeed to its use. Not more than a minute could have passed from commencing its application when the patient expressed herself relieved from, first, the lumbar pain, and next, that in the pubic and uterine regions. After I had withdrawn the instrument, for some time a sensation of warmth, of a very agreeable nature, combined with that of strength, was described as being felt in the back. Altogether, she said, for months she had not been so free from pain or so comfortable. Judging from the expression of countenance, the change so immediate from suffering to freedom from pain was most remarkable. There was no return of it until about eight o'clock in the evening, from the time of the application of chloroform during the day, which was between twelve and one o'clock; but it was then so trivial that she did not think anything of it. The next day two or three jets of the douche quite removed every trace of uneasiness. The patient said she was not only relieved of the pain in her back, but she was perfectly free from the bearing-down sensation which had troubled her very much for some time past.

The drain of suckling on a weak constitution tends to the production of many debilitating and nervous complaints, which are met with very frequently in the form of headache, giddiness, pain in various situations, &c. The following case affords an instance of this description. The subject of it was very unfit to act in the capacity of wetnurse, and was rendered still more unfit by the occurrence of uterine hemorrhage. Increased debility, as a natural consequence, followed the loss of blood; then came on violent lumbar and epigastric pains.

The remedies usually resorted to in such cases, and which are very beneficial, consist in tonics and anti-spasmodics, to which must be added a full and generous regimen, with exercise in the open air; but in the present instance it was very desirable to relieve suffering immediately, which was of a very severe nature, and in itself, independent of the previous drain, exceedingly debilitating to the patient's constitution. The vapour of chloroform served to effect this in a most satisfactory manner, and within the space of a much shorter time than could have been accom-

plished by any other remedy with which I am acquainted, while it in no way prevented the adoption afterwards of those means which were fitted to restore strength and vigour.

Case 4. Mrs. K., aged 32, a delicate-looking person, the mother of six children, at present nursing her youngest, a child of seven months' old, was seized in August last with violent uterine hemorrhage, since which occurrence her back troubled her very much, and for three days previous to my seeing her was accompanied by severe pain, referred to the epigastric region. Owing to the violence of her sufferings, she came to consult me about three weeks after the attack of uterine hemorrhage. She seemed in great pain, and was bent forward from that in the epigastrium, which she described as running across from right to left. Immediate relief was anxiously sought for: I therefore proceeded to apply the vapour of chloroform to the uterus, *per vaginam*, by the anæsthetic douche, in hopes of giving her ease sooner in this way than by any other means. I had scarcely sent half a dozen jets against the os uteri when the pain subsided, first in the back, and immediately after in the epigastrium. The sensation perceived by her she described as being a most agreeable and comfortable feeling of heat in the spine, and a total relief from every trace of pain, which ease she had been a stranger to for the last three weeks. On rising from the sofa to sit in the upright position she felt a little weak, but only for a few minutes. During the application of the vapour she had no unpleasant or unusual sensation in her head, and the pulse seemed unaffected.

When abortion frequently takes place in any female, but more particularly in one of a much injured constitution, having in it the dregs of syphilis, diseases hard to manage, and attended with a good deal of distress, are occasionally presented to the medical man. The case next detailed is very much of this description. Various remedies were resorted to, but none of them served to secure perfect relief to the patient, whose situation in life rendered her peculiarly liable to relapse. She was the wife of a soldier, and consequently passed from the care of one medical practitioner to that of another, to which circumstance she referred much of her delicacy.

It will be seen in the notes of the case that chloroform was used in the form of ointment with more relief than was obtained from any of the other remedies, but at length failed in procuring ease; however, by resorting to the vapour, the benefit derived was very decided, and far more effectual than had been before experienced from any previous plan of treatment. The patient herself felt so entirely free from her usual sensation that her countenance now bore the expression of comfort and satisfaction.

Case 5. Mrs. R., aged 33, a very weak, sickly-looking woman, came under my care on the 4th of April, 1853, on account of uterine hemorrhage, which had followed a miscarriage she had three weeks previously. She had brought forth three children, all premature, and had several abortions. From her general appearance, and the history of her case, I found that a syphilitic taint was in the constitution; and the want of proper advice and care at all times, but particularly in her abortions, had added much towards increasing her delicacy. After the hemorrhagic discharge was altogether restrained, it was discovered that ulceration of the os uteri existed, which got quite well under treatment. During the time that it was present, and for some time after its being healed, she suffered very much from pain in the back and loins, with a most distressing sensation of scalding in the vagina, which required numerous remedies for its relief. One of the most effectual was the ointment mentioned in Case 1. Rubbing a little of this across the loins and over the sacrum was very soothing and agreeable.

On the 12th September she had a return of pain in the back and vagina such as I have described, but without a recurrence of ulceration of the os uteri. She resorted to the use of the ointment to her loins in the usual way, but without obtaining relief.

On the 15th she was forced to come to me, having suffered so much during the previous night, and was evidently in very great distress. I now applied the chloroform vapour, by means of the anæsthetic douche, to the uterus and vagina. In about four or five minutes she experienced relief, first in the back, and presently after in the vagina. I continued its use for several minutes in order to render the effect more permanent, which so fully succeeded, that she walked away feeling *quite* comfortable and free from pain. When I next saw her, a few days after the

application, she said relief was still felt by her, and that she had more ease than for a very long time previously.

The nipples are not uncommonly the seat of a good deal of irritation, quite independent of the existence of abrasions or fissures, which could account for this circumstance. I met with a most troublesome case of the kind some time ago in a first confinement, where pain was so great on applying the child that the lady, a very excitable person, could not bear the least effort of suction, though the cuticle, by the application of lotions during the latter months of pregnancy, was in a most healthy condition, without the least appearance of abrasion or fissure on the nipples, which were well formed, and projected sufficiently from the breasts. By smearing some extract of belladonna over the breasts, at some distance from the nipples, about an hour before nursing, all irritability was removed during the process of suction. To prevent risk to the child the belladonna was carefully washed off before placing it at the breast. This treatment was pursued for but two or three days, when the annoyance was perfectly relieved.

The results obtained in the following case from the local employment of the vapour of chloroform to the breast would lead me to prefer its use in a similar instance of irritable nipples to that related. It is less troublesome in its application than the extract of belladonna, and infinitely safer for the child. It is worth remarking how long the effect produced by it continued, several hours having elapsed before pain again became troublesome.

Case 6. A. Coffey, aged 30, the mother of five children, applied to me on the 16th of September, 1853, under the following circumstances. A week before coming, her child, an infant of thirteen months old, was sucking, and bit the nipple of her left breast, which hurt her very much. She persisted in nursing after the injury until the sixteenth of September, when the pain was so great that she was forced to desist. The entire breast was exquisitely tender to the touch, particularly on its under surface and towards the axilla, where it felt very hard and much enlarged; the skin moved freely over the tumefied gland, and was free from any inflammatory blush. The nipple was also very tender, and had a small scar on it, such as a child's tooth would make.

The patient informed me that for the last few days she had frequently a sensation of faintness, and altogether was very weak and languid.

In order to prevent the too rapid passing away of the vapour, I covered her breast with a capsule of paper, and under it directed the pipe of the douche towards the nipple, upon which I caused the chloroform to act during the first part of the operation. In about a minute or so, she could permit me to press it between my finger and thumb without the least sensation of pain. I then caused the vapour to pass on the tumefied part, under the paper capsule, which became influenced in a similar manner as the nipple, and could bear to be raised and examined with very little uneasiness. The woman now passed her own hand over and under her breast, and expressed herself very much relieved, and much more comfortable than she had felt for some days. When I next saw her she told me her breast had felt very easy during the remainder of the day on which the chloroform was applied to it.

The next case is inserted, though rather out of place, but as cholera seems again about to visit us it may not be altogether void of interest, as showing the beneficial results likely to be obtained from the use of chloroform in that disease. I have used this medicine very freely in many of the cases of vomiting and diarrhœa which have fallen under my notice during the present season, and from what I have observed of its efficacy, in staying the irritability of stomach and restoring warmth to the patient, I feel much prepossessed in its favour.

Case 7. Mr. B., aged fifty-nine years, was attacked with cholera during the night of the 27th of August, 1853. He had no sleep, vomited everything taken into the stomach, passed large and frequent rice-coloured watery stools, and suffered severely from cramps in the abdomen, loins, and extremities, which caused him to cry out repeatedly.

I saw him at an early hour on the 28th. He was then very low and weak, countenance anxious, dark and much sunken, pulse very small, but not much increased in frequency, surface of the body and extremities cold. The purging had ceased for a few hours, but he continued to reject everything from the stomach. I directed a mixture, which he immediately vomited, though given with the intention of quieting

this distress. He had taken camphor dissolved in spirits, which was of great comfort to him, but did not stop the vomiting. I now gave him a draught containing fifteen drops of chloroform in a little cold water, which he drank with great eagerness, and described it as the most reviving thing he had taken. Very soon after he fell into a quiet and refreshing sleep for two hours. On awaking he felt much better; the stomach was quiet, and he expressed himself as being warm and more comfortable.

I directed a draught containing ten drops of chloroform in a little water to be given every two hours whilst the vomiting continued. However, the relief and comfort caused by the first was so great that he desired a second, and was given it, though he had no return of vomiting. The stomach remained perfectly quiet, and he was doing well until his friends unfortunately, at his own request, gave him a glass of ginger-beer, which renewed the vomiting and purging. I now gave him acetate of lead and opium, ice, cold water, &c.; and to relieve the cramps I had the loins, abdomen, and extremities rubbed with chloroform, in the proportion of a drachm to an ounce of white wax ointment. This acted remarkably well, and not only produced the desired effect in quieting the cramps, but tended a good deal towards allaying the vomiting. In the course of a few days he was convalescent.

In observing the effects of chloroform as applied locally in the form of vapour in the above cases, I have endeavoured to obtain as correct a notion of it as possible, in order that a true estimate might be arrived at of its value as a remedy. Besides the cases here recorded, I have applied the vapour locally in various other forms of irritation. One of these in particular I was anxious to know its action in—namely, *pruritus pudendi*, a disease exceedingly troublesome and unpleasant to the patient, and for the relief of which she is often very reluctant to ask a remedy until forced to do so. I have used it in a case of this kind in the person of a very intelligent patient, who for a length of time had been annoyed, particularly on the approach of a menstrual period, by this distressing complaint, for which she had made use of various remedies. The vapour of chloroform, she informed me, afforded her relief from her uneasy sensations. On referring to one of the cases (Case 5) detailed, it will be seen that there was a very severe sense of scalding in the vagina, which seemed to depend a good deal on uterine irritation. Knowing the heat caused by the vapour of chloroform, I feared this patient would have suffered severely from its application; but, on the contrary, she was quite relieved of it; so in *pruritus pudendi*, arising from a similar cause, the like results have been obtained as in her case.

If future investigation as to the effect of the vapour of chloroform when locally applied coincide with the results already observed in the series of cases herein detailed, it seems reasonable that the following conclusions be considered deducible:—

First. That in many forms of disease attended with pain or irritation, the local application of the vapour of chloroform will frequently act as quickly in affording immunity from suffering as though inhaled in the usual manner.

Secondly. That the vapour locally applied is not attended with any unpleasant effects (save the sensation of more or less heat) either at the time or subsequently, and is therefore eligible under circumstances contra-indicating its use by inhalation.

Thirdly. That as a remedy, its local application is preferable to the use of opium and most narcotics in spasmodic and painful affections, particularly of the uterine system, owing, first, to its freedom from causing derangement of the digestive organs; and, secondly, to its greater rapidity of action.—*Dublin Quarterly Journal, Nov.* 1853, *p.* 306.

147.—*Morphia and Chloroform in Puerperal Convulsions.*—[At a meeting of the Newcastle and Gateshead Pathological Society, Mr. ANDREW BOLTON read notes of the following case:]

Elizabeth ——, aged 22, unmarried, at the full period of a first pregnancy, healthy, but for some time in a desponding way, was seized, Jan. 9, at four a.m., with pain in head and loss of vision. At eight a.m. I was summoned in time to witness a severe convulsive paroxysm, attended with stertor, lividity of countenance, and *apparent* impending suffocation. Twenty ounces of blood were drawn from the arms,

and the cold douche unsparingly used to head and shoulders. In ten minutes she was calm again, the pulse reduced in tone 100. On examining the os uteri it was felt high, slightly dilated, and extremely rigid. The mere introduction of digits sufficed to bring on the convulsions, which recurred again and again, with intervals of five or ten minutes, the whole muscular system participating in the spasms.

11 a.m. Paroxysms continue, and she is with much difficulty restrained. At the suggestion of my father, two drachms of sol. morph. Ph. L. were given, producing an hour's repose.

Half-past 12. Dose of morphia repeated, convulsions having returned with increased violence; countenance and general surface pale; the extremities cold. As her condition appeared hopeless, should the paroxysms continue, chloroform was administered on a piece of linen, in half-drachm doses, and its full effects kept up for three hours. At 2 p.m. there was a slight return of convulsion; skin warm and perspiring; the os uteri was found steadily dilating; and from her uneasy movements it was apparent that uterine action had begun.

Half-past 3. The membranes were ruptured; and brisk uterine action ensuing, a dead child was expelled, immediately followed by placenta. She regained her senses during the expulsive efforts, but appeared entirely ignorant of her previous condition. Recovery followed without any bad symptoms.

In conclusion, I would remark, that the convulsions were in no measure mitigated by the depletion, which was carried to the utmost; nor was there any yielding of the os uteri until the chloroform was inhaled.—*Med. Times and Gazette, Oct.* 15, 1853, *p.* 412.

148.—ON THE PATHOLOGY AND TREATMENT OF UTERINE CATARRH AND INTERNAL METRITIS.

By Dr. E. J. Tilt.

[It may be stated with a great degree of confidence, that the general opinion of medical men with regard to the seat of leucorrhœal discharges, is, that they depend upon organic lesions of the os uteri and its vicinity. In these cases the treatment is effective and satisfactory. But in some cases the lesions may be in the mucous membrane lining the womb, and it is in these cases especially that there is the greatest uncertainty, both as regards the diagnosis and treatment.

Uterine Catarrh.—The following are cases of subacute or chronic inflammation of the lining membrane of the neck of the womb, and from the frequency of such cases, are well worthy of attention. The patient was a stout florid lady, aged 26, married. The symptoms first arose from getting wet upon the feet. There was constant pain in the back, and in the left ovarian region.]

Menstruation retained its regular type, but was accompanied by a much more abundant flow, more pain, and by hysterical fits. This state of things had lasted two years when I was consulted. There was then considerable pain on making a digital examination, and I found the neck of the womb spotted with numerous exulcerations. These were cured by several applications of nitrate of silver and vaginal injections, with a solution of acetate of lead, but the back and ovarian pains remained unabated, so did the hysterical symptoms. There was no lesion to account for these symptoms, but as on pressing laterally all down the neck of the womb I gave considerable pain, and as the brown discharge continued, though the body of the womb was neither painful nor enlarged, I concluded that the lining membrane of the neck of the womb was subacutely inflamed, and, with the view of substituting a healthy inflammation instead of one of a low type, I painted the inside of the neck of the womb with the solid nitrate of silver. This was followed by much abdominal pain and protracted hysterical fits. A second application, made ten days afterwards, being followed by similar accidents, I resorted to the application of tincture of iodine inside and outside of the neck of the womb. This was done every four or five days for the first three months, and then only once a week, while at the same time the patient took thirty drops of Bullock's syrup of citrate of quinine and iron three times a day. Menstruation continued extremely profuse for the first three months of treatment, being often accompanied by hysterical fits; but the morbid symptoms gradually abated, and the patient has been for the last six months free from all suffering, uterine discharge, and hysterical symptoms.

[The second case was in a delicate patient, aged 26, with similar symptoms, but attended also by a profuse discharge of viscid fluid from the uterus. The cause was, her remaining several hours in damp clothes.]

No pain was felt when the body of the womb was pressed, but a considerable amount when lateral pressure was made to the neck of the womb. The uterine symptoms were alleviated by the application of the solid nitrate of silver to the internal surface of the neck of the womb, and instead of white the discharge became brown. This was checked by seven or eight applications of the tincture of iodine, and the patient experienced no further suffering. A few months back, however, I was again sent for, as there was a fresh attack of uterine pain and brown discharge, which was cured by topical applications of tincture of iodine, by the internal exhibition of steel, and by a sea voyage. In this case also the patient has never conceived. Menstruation remained regular, and there was no flooding.

[Dr. Tilt makes the following remarks upon the symptoms and treatment of this disease.]

Symptoms.—Pressure applied *laterally to the neck of the womb* gives more or less pain, which is not the case in the healthy state. A glutinous discharge is seen oozing out of a somewhat turgid os uteri, and long threads of it may be removed; but when uncomplicated by erosions, ulcerations, or vaginitis, we have not observed that the discharge was frequently abundant. Whether the mucous follicles lining the neck of the womb can be affected by some other lesion, so as to warrant Dr. Tyler Smith's position, that the mucous membrane of the neck of the womb is the most frequent origin of leucorrhœa, remains to be decided by further researches; this opinion having been also held by Boivin and Duges, it demands very careful consideration.

Sometimes the discharge is of a brown colour, as in the cases related; not mucus streaked with blood—not the sero-sanguinolent discharges of the body of the womb, but an intimate mixture of mucus and blood, as in the rusty sputa of pneumonia. This discharge we consider to be very characteristic of subacute inflammation of the mucous lining of the neck of the womb; and on a microscopical examination, it is found to contain globules of blood more or less deformed, and mixed with mucus and ephithelial scales. It is very annoying to women, from the manner in which it stains the linen. This discharge may last the whole intermenstrual period, or only during the ten days which follow the flow; and we have found iodine applications of great utility in such cases. Judging from my own practice, I believe that the *viscous* discharge is more frequently met with than the *brown*, which generally accompanies a very mild type of inflammation.

Chomel, in his Clinical Lectures, has drawn attention to cases in which there is a red stain on one of the lips of the os uteri; instead of being sunken, it is slightly raised, of a vivid redness, velvety to the touch, not surrounded by pus, but by the well-known viscous fluid of the neck of the womb. This is no more an ulceration than the port wine stains or erectile spots on the skin, and may be considered an exaggerated development of the bloodvessels of the villi, which in the normal state are covered with cylindrical ephithelium, and, when hypertrophied, form a piece of living crimson velvet, which in four instances I have seen lining part of the cavity of the neck, giving rise to the symptoms I have just described. Such lesions predispose to metrorrhagia, and their detection suggests the necessity of active local treatment, as in an exaggerated instance of this lesion which was related by Dr. Forget to the Society of Emulation at Paris. A woman had experienced repeated metrorrhagia; and on being examined, the neck of the womb was found lined with a soft, red, and bleeding substance, elastic, crepitating, and offering most of the characters of erectile tissue. This surface was repeatedly cauterized, and after a few months of treatment, was completely cured. We think that Dr. Kennedy, of Dublin, has described similar appearances under the name of *doughy* or *baggy* ulcers of the womb. In my four cases, the women had been several years married, and had been sterile. This is in harmony with Chomel's experience.

Prognosis.—Dr. Kennedy has stated that "although the inflammation of the internal surface of the neck of the womb may be borne without great inconvenience for years, still it leads to the serious implication of the sub-mucous tissues, which undergo a change which may be termed *uterine ramollissement*, attended by frequent *hemorrhages*, unhealthy, grumous, and muco-purulent discharges." Now, with due

deference to high authority, we think that Dr. Kennedy has described exceptional cases. All mucous membranes may remain chronically inflamed for years, without entailing more serious lesions than were first visible, and in general the mucous membrane lining the neck of the womb may remain subacutely inflamed, without causing anything like *uterine ramollissement*, but it fosters hysterical phenomena, keeps up a vaginal discharge, and causes repeated relapses of erosions, or ulcerations of the neck of the womb. I believe Dr. Tyler Smith's views are correct, and that the inflammatory action of the glandular mass of the neck of the womb, determines the too abundant secretion of its alkaline products, and that, by their presence on the os uteri, accustomed to acid secretions, they cause the rapid shedding of the epithelium, with that destruction of the subjacent villi which warrants the name of erosion or exulceration. Whatever form it assumes, all observers agree that subacute inflammation of the mucous lining of the neck of the womb is a frequent cause of sterility.

Treatment.—Dr. Melier advised the injection of emollient fluids into the cavity of the neck of the womb, but they would be ineffectual to modify the inflammation of the mucous membrane, while their entrance into the cavity of the body of the healthy uterus might be attended by dangerous results. If emollient injections into the cavity of the neck of the womb are objectionable, how much more so must be injections of a solution of nitrate of silver, as used by some French practitioners for what they call *uterine catarrh?* Although the cavities of the healthy body and neck of the womb are separated by a stricture, sufficiently tight to prevent the easy passage of the uterine sound, nothing proves that this stricture could prevent the passage of fluid, and the numerous and fearful accidents which have attended the practice of uterine injections, permit the belief that the stimulating fluids sometimes cause fatal metro-peritonitis, by passing into the healthy fundus uteri, and, perhaps, into the peritoneum through the oviducts. Dr. Bennet states, in his work on Uterine Diseases, p. 269, "that nothing but strong cauterization with acid nitrate of mercury, or the potassa fusa cum calce to the lining membrane of the neck of the womb, can overcome the tenacity of the disease." If this refers to exceptional cases, I commend the practice, but in cases similar to those related, I prefer the tincture of iodine, or the iodide of iron, because it enables us to effect a solid cure, without inducing much pain, or running the chance of the serious accidents which sometimes follow caustic applications. After clearing away the uterine mucus I apply the tincture of iodine with a *sable* paint-brush, introducing it as far into the neck of the womb as can be done without using much force. On withdrawing the brush, I paint the vaginal portion of the neck of the womb. This is a mode of practice that I have now used for several years, and I can safely recommend it, as I find that something similar has been recommended by Dr. F. Churchill. A drachm of acetate of lead, in a pint of decoction of poppy-heads, forms the best injection in such cases.

With regard to the crimson elevations on the mucous lining of the neck of the womb, tincture of iodine is of little use. The solid nitrate of silver is the best application, or the acid nitrate of mercury; and it must be borne in mind that this condition is often more difficult to treat than simple ulceration. With respect to constitutional measures, I shall merely say, that in all chronic uterine affections the practitioner will find a sheet-anchor in the various preparations of iron, and that the syrup of citrate of quinine and iron, or the syrup of iodide of iron, are very good preparations.—*Lancet, Dec.* 10, 1853, *p.* 545.

149.—ON THE TREATMENT OF INTERNAL METRITIS.

By Dr. E. J. Tilt.

[The following is the treatment which Dr. Tilt recommends to be employed in the various morbid states of the mucous membrane lining the womb; but he observes that it is frequently beset with difficulties, and may be protracted for a long time.]

There are certain general indications of treatment available in all cases, whether the uterine mucous membrane does or does not present organic products on its surface. Thus it is necessary to ascertain by a careful examination, whether the hemorrhage does not depend upon some erectile development at the orifice of the neck of the womb, as in cases alluded to in the previous papers. The menorrhagia

must be restrained by the means usually recommended, among which we may mention the horizontal position in a cool temperature; the application of cloths steeped in cold vinegar and water to the pubes and the inner part of the thighs; the injections of cold water or cold aluminated water, to the vagina and rectum, two or three times in the course of the day. Such measures, however, will seldom succeed unless they be associated with the internal exhibition of ergot of rye in doses of from five to ten grains three or four times a day, from which we think the most benefit is to be derived, though in some cases the practitioner will be obliged to ring the changes on mineral acids, acetate of lead, tannin, gallic acid, &c., according to the rules laid down in works on therapeutics, to which I refer the reader.

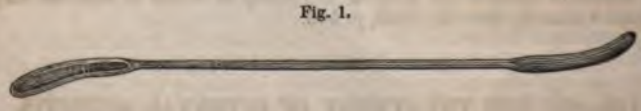
The patient's strength must be kept up by such an amount of food as can be digested; but it should be taken cold. Wine and stimulants should be avoided, and all drinks should be as cold as possible. Water, or cream ices, flavoured according to the patient's taste, may be advantageously given between meals. Should the complaint determine continued insomnia and hysterical symptoms, acetate of morphine must be given, and the doses progressively increased until such symptoms abate. In the interesting case I related in a previous paper, the patient for many days took from two to three grains of acetate of morphine, and I believe that it not only brought on sleep and diminished hysterical phenomena, but was also instrumental in curing the uterine disease, for the manifest improvement only set in when the patient was brought under the influence of opium.

When the violence of the disease has abated, and instead of flooding, there remains, amongst other symptoms, a moderate discharge of serum, sanguineous or not, then benefit will be derived from the application of a seton or issue above the pubes, either of which should of course be kept open for several months. This is a disagreeable remedy, and therefore seldom proposed, but it will be found beneficial not only in cases of internal metritis, but also when dysmenorrhœa is attended by uterine exfoliation; indeed we have found nothing so useful in this obstinate complaint.

If it has been ascertained by means of the uterine curette that the internal surface of the womb is free from all morbid products, all further instrumental interference would be objectionable, inasmuch as it could do no good, and must do harm. Should the curette, on the contrary, detect roughness, and bring away some of the morbid growths previously described, their removal from the womb is an indication of first-rate importance, since a rapid cure has sometimes followed the operation, and no improvement can take place so long as they remain.

As this method of treatment is almost unknown amongst us, and as it is also applicable to the cure of menorrhagia when caused by retained portions of placenta, or by hydatid growths in the early stage of their formation, I shall enter into some details. Recamier, in one case, finding the neck of the womb much dilated, introduced his finger into the cavity of the womb, and scraped off the vegetations with his nail. This suggested to him, some forty years ago, the idea of doing the same with an uterine sound made of pewter or steel, and he called it a *Curette*, because it was destined to remove morbid growths from the cavity of the womb. The curette is an uterine sound, blunt, somewhat curved at its extremity, and hollowed out on its curved side,

Fig. 1.



as it is shown in figure No. 1, the extremities of which are represented as more pointed than they really are. It should be introduced into the cavity of the womb like Dr. Simpson's uterine sound, and then gently pressed on the internal surface of the womb so as to detach any soft bodies which may be there. In some rare cases in which the internal orifice of the womb was widely dilated, Recamier used a larger instrument (fig. 2.) Whatever instrument was used, the speculum would only render the operation more difficult. Recamier generally followed up this treatment by cauterizing the internal cavity of the neck of the womb with the solid

Fig. 2.

nitrate of silver, by means of an instrument resembling Lallemand's *port-caustique*. Two cauterizations were in general sufficient, and in some of the cases published by Recamier, this treatment had for effect not only to stop the menorrhagia, but also to cause the womb to contract, and thereby to return to a right position from retroflexed, which it had been for years. These operations have been performed in the presence of Paul Dubois, Blandin, Guerin, and many others; and repeated by Maisonneuve, Robert, Gosselin, and myself. In the course of the last year, Nelaton and Nonat have published several cases of it in the "Gazette des Hôpitaux." The first effects of the operation are to increase considerably the habitual hypogastric pain, but this does not last long, and when it disappears, the habitual pains likewise disappear, as well as the fœtidity of the discharge, and those sero-sanguinolent discharges which have lasted for years sometimes completely cease in a few days.

Many will doubtless be afraid of this operation, but is nothing to be risked when menorrhagia is interminate, and when the patient's health is sinking from the effects of abundant sero-purulent discharge, for which the neck of the womb gives no explanation? In such cases, fortunately rare, is it not rational to enter the cavity of the womb with a blunt instrument, in order to interrogate its surface, and to remove superficial abnormal productions which have been known to produce the symptoms I have detailed? The risk is not so great as might be supposed, for Recamier performed the operation on 100 patients, and only lost three by peritonitis. In two cases, peritonitis was caused by the passage of the curette through a previously softened portion of the womb, which was thus transfixed by the instrument. In the third case, Professor Nelaton, who made the post-mortem examination, was not convinced that death was caused by the operation; no trace of metritis was found, neither had the curette made a false passage. Pus was found in both the Fallopian tubes, but as the patient was opened twenty-four hours after the operation, it is difficult to suppose that it was produced by the operation. I have not heard of any other fatal termination to the numerous similar operations performed by other surgeons. A very large volume could be filled with the fatal effects of false passages made in attempting to sound the bladder, and still surgeons continue to perform this operation. We have heard of several fatal results of false passages made with the uterine sound, and still most practitioners feel themselves justified in using an instrument of which Dr. Simpson has well indicated the utility. For the same reason, I feel justified in advocating the use of the uterine curette, notwithstanding accidents, which will impress upon you the necessity of using it with intelligent gentleness. You will, moreover, doubtless observe that the plan of treatment I have shown to be useful in some rare instances is not more dangerous than that proposed by others for similar cases. Velpeau advocates injections and cauterization of the internal cavity of the womb; and Dr. Bennet, in his notice of internal metritis, says "that he has carried the solid nitrate of silver into the cavity of the womb in internal metritis, or else the acid nitrate of mercury as a last resort, and sometimes without success."

I must not omit mentioning that you will find the curette, as represented in Fig. 1, very useful to remove portions of retained placenta from the womb, when its size and sensibility, as well as continued flooding subsequent to confinement, lead to such a diagnosis. Recamier first used it for this purpose, I and others have imitated his example. Vidal de Cassis, Hourmann, and other French practitioners, have tried injections of a solution of nitrate of silver in what they term uterine catarrh. Acute peritonitis occurred in some of their cases, several of which ended fatally; but I have already shown that French pathologists have confounded some half-dozen different diseases under the name of uterine catarrh.

To give an idea of the kind of cases in which the French have tried uterine injections, I shall relate what Becquerel did at La Pitié in 1850. He chose seven women, in all of whom the neck of the womb was more or less acutely inflamed; the orifice of the womb was larger than it ought to have been, and surrounded by ero-

sions; the discharge was muco-purulent. An india-rubber sound was introduced into the womb to the depth of an inch and a half, and by means of a syringe, a solution of nitrate of silver of two grains to the ounce of water was injected. Three out of the seven patients were suddenly seized with symptoms of severe metro-peritonitis, from which it is true that they recovered, but without even being cured of the original uterine disease, of which only one out of seven was cured. These cases could not have been worse chosen, for while the neck of the womb was acutely inflamed, the body of the womb was most likely in a healthy state; and although the india-rubber sound did not penetrate into the cavity of the womb, the solution of nitrate of silver did, and coming in contact with a surface, the sensitiveness of which had not been blunted by long-continued morbid action, metro-peritonitis ensued.

The fatal result of uterine injections in such cases does not imply that they would not be useful in well-selected cases. Although such is my opinion, I have never employed injections into the womb, for I have been deterred from their employment by the knowledge of the uncertainty of their action. Sometimes a strong solution of the nitrate of silver can be injected into the womb without much reaction; at others, a decoction of nut leaves brings on acute peritonitis. This uncertainty of action is met with even in the same patients: thus, in one of Recamier's cases, the vegetations had been removed from the womb, its cavity had been twice cauterised without determining any reaction, when it was thought advisable to inject a little tepid water into the womb, but this was very soon followed by violent symptoms of peritonitis. In three of Becquerel's cases peritonitis ensued after a second, a third, and a fourth injection, the previous injections having produced no ill effects.

In case uterine injections should be deemed useful, a weak solution of tincture of iodine would be the best fluid to be used, and the best instrument, that which was suggested to Dr. Mackenzie by the sight of Mr. Coxeter's ingenious instrument for laryngeal injections. I should, however, caution those who might use it to press lightly on the fundus of the india-rubber receptacle, otherwise the fluid would be projected with too great force. In two instances I have removed the vegetations from the internal cavity by means of the curette, and nature did the rest.

In another case, after applying the speculum, and removing as much as possible of uterine mucus, I covered the extremity of the uterine sound with cotton wool, which, when saturated with tincture of iodine, I introduced into the cavity of the womb. The neck of the womb took up part of the tincture; so, removing the sound, I again saturated it, and re-introduced and pressed it about in various directions. This was not followed by much pain. Three days afterwards some of the vegetations came away, with a sero-purulent discharge. Ten days after, I repeated the operation with similar results, and then the case did well.

In the wards of Baudeloque, at the Hôpital des Enfants at Paris, I had been often struck by the good effects which followed the application of caustic iodine to the ulcerated surfaces of scrofulous patients, and I was led to try the same application, according to the strength indicated by the Pharmacopœia, or diluted with water, to various morbid lesions of the mucous membrane of the womb.

The benefits to be derived from the topical applications of iodine to the womb are little known to the profession, and are well deserving of more extensive trial than has hitherto been given to them, not only on account of the favourable results of their application in the cases under consideration, but also from the well-known fact of the innocuity of the introduction of iodine into our tissues. Within the last few years, in France, tincture of iodine has not only been injected into the tunica vaginalis, to cure hydrocele, but also into fistulous passages of acutely-inflamed extensive mammary abscesses, into large ovarian and other cysts, and even into the peritoneal cavity to cure ascites, and without determining those symptoms of violent inflammation that might have been expected.

Having thus briefly sketched what is known relative to uterine catarrh and internal metritis, it may be well to state some of the points in which they differ, as the last complaint has but little occupied the profession of this country.

Uterine catarrh is very frequent; internal metritis very rare. Uterine catarrh almost exclusively affects the neck of the womb; internal metritis, its body. Uterine catarrh is as frequently observed in the single as in the married; internal metritis *seems to* affect almost exclusively those who have borne children. In uterine

catarrh the discharge is viscous; in internal metritis, serous or sanguineous, and very abundant. Uterine catarrh gives rise to no abnormal growths; internal metritis frequently does. In uterine catarrh life is never compromised; it is not unfrequently so in internal metritis. Injections have been found useless and often dangerous in uterine catarrh, but are sometimes serviceable in internal metritis.—*Lancet, Jan.* 21, 1854, *p.* 63.

150.—ON THE DIMINUTION AND DISAPPEARANCE OF UTERINE TUMOURS.

By Dr. Samuel Ashwell, late Obstetric Physician and Lecturer at Guy's Hospital.

[There is something very extraordinary in the spontaneous diminution of some uterine tumours, without any coincident breaking-down of their structure. A few striking cases of this kind are here recorded. The alarm on discovering the presence of large tumours of the uterus is by no means so great as it was some years ago.]

The exact pathology, however, of certain of these uterine tumours is still a vexed question—one certainly admitting of further elucidation—whether, for instance, a *fibrous* tumour is ever capable of being absorbed, is yet a matter of dispute; for while Lisfranc regards the absorption of any tumour as satisfactory proof that it is not fibrous, there are, as I shall show, distinguished pathologists, both in this country and abroad, who believe they have witnessed the melting down and disappearance of both fibrous and cancerous growths. It is therefore right, where we can only form a doubtful diagnosis as to the nature of any uterine tumour, to treat it as though it were curable; for if malignant, judicious treatment can do no harm; whereas, if it be of unspecific and benign character, the treatment will generally prove curative. I state then, at once, that the pathology of these large and hard tumours, to the very occasional diminution and disappearance of which, *without* coincident breaking-down and discharge of their structure, I am now soliciting attention, is not the object of this paper, my aim being to show that tumours of the uterus so large as to attract attention by their great size, so hard as to resemble, in some examples, the hardness of true carcinoma, and giving rise to alarming hemorrhages and frequently-recurring pain, do very occasionally, when all treatment has been abandoned, present the following results:—

First. A slow but progressive diminution of bulk and of hardness, unaccompanied by any appreciable breaking-down of their structure.

Second. A lessening at least, and sometimes a cessation of the bleedings, profuse menstruation and discharges, and, where it has existed, of the pain.

Third. A gathering of flesh, and a restoration of the general health.

As tending to confirm these statements, I shall adduce the opinion of some eminent pathologists, to prove that the absorption even of scirrhous tumours may be effected by appropriate treatment.

Sir Charles Clarke (vide 'Ashwell on Female Diseases,' p. 297) mentions a case "where a tumour as big as a child's head could be felt through the parietes of the abdomen; just above the pubes, upon its surface, could be felt two smaller tumours —one the size of a man's fist, and the other twice this size. The patient had laboured for some time under a very profuse discharge of blood from the vagina. A variety of means were employed for the relief of this case for two years. Upon examining the abdomen at the end of this period, the tumours could not be discovered, and after death the uterus was found as large as that of a woman at the end of the fifth month of pregnancy. Upon the anterior part of it, near the fundus, were found two tumours, *as large as peas*, which were probably the same tumours before felt, as there was no other vestige of them. The tumours were of a hard and resisting nature, and were lying between the muscular part of the uterus and the peritoneum covering it."

Dr. Walshe (in one of the most invaluable text-books of our profession, 'On the Nature and Treatment of Cancer,' p. 134) says, in reference to the termination of cancer, by *resolution and absorption*,—"one of the most essential attributes of cancerous substance is an unswerving tendency to grow, or at least to sustain itself unimpaired, by the influence of surrounding parts; its nature is opposed to resolution. Nevertheless, there would be temerity in denying the possible occurrence of

this unfortunate change." Weller affirms, that he observed a medullary fungus of the eye of an infant, which eventually disappeared, and was followed by dropsy and atrophy of the ball. Mr. Travers relates, that "the solution of chloride of lime effected the absorption of a large tumour (in the course of some months), regarded by competent authorities as scirrhus, in a lady whose other breast had been extirpated for that disease. No long after she died of asthma, from diseased lungs; the scirrhous tubercle appearing not only in the chest, but in several of the abdominal viscera." Whether the use of the chloride and the disappearance of the growth were a mere coincidence or not, I may at least adduce this case as confirmatory of the effects of treatment in my own cases; where, of course, the patients having happily recovered, the precise nature of the tumours could not be certainly ascertained.

Dr. Walshe (p. 207) remarks, that the external use of iodine, in the form of ointment, sometimes completely removes tumours possessing the character of scirrhus (where it has been had recourse to at an early stage of their development), is a fact of which we have witnessed some examples." Further on, the same distinguished author adds, "Nor does my present experience (1846) allow me to conceive a single doubt that tumours *actually and truly scirrhous in structure*—tumours which would have run the common course of cancer—may be arrested in their progress, by early and judicious use of these agents. Mr. G. N. Hill's cases ('Edinburgh Med. and Surg. Journal,' vol. xxv., p. 282, 1826) afford very decisive evidence of the same effect; and Dr. Ashwell's statements on the subject (see 'Cancer of the Uterus') are strongly encouraging." The convictions of Mr. Travers on this subject (one of our highest authorities) are peculiarly strong: "By an indolent scirrhus," says the writer, "I mean an incompressible, permanent tumour, possessing for many years no distinguishing character of that disease; but in a deranged state of health assuming its general character, and at a particular period of life breaking up into actual cancer. I do not entertain a doubt that such a tumour *may be, and often is, absorbed in its first stage, and need not therefore of necessity follow this course.*"

It may, then, be assumed that the diminution and disappearance of tumours, regarded as scirrhous, is not beyond the pale of a reasonable credulity. Of whatever nature the tumours to be described by myself may have been, they were morbid enough, if even only simple inflammatory indurations, to originate and keep up symptoms so distressing, as to destroy almost entirely the comfort of life. It cannot, for example, be a small amount of suffering which has to be endured, where a *hard* tumour, the size of an adult head, has for months, perhaps years, by its bulk and weight, pushed out of their place the contiguous viscera, and pressed severely on the ganglia, trunks, and branches of the neighbouring nerves. Nor can the bleedings, frequently attendant on such growths, fail to alarm, not only from the syncope and long-continued exhaustion, which is their immediate result, but also from the impaired health and dropsical effusions of which they are so often the precursors.

Many of my cases have been associated with severe, frequently-recurring, and sometimes almost constant pain, for weeks and months together, in or about the growth. Emaciation, where the tumour was large, has not been an uncommon event. Nor ought the possibility of pregnancy (on which I have fully dwelt in my work on 'Female Diseases'), and its dangerous and ofttimes fatal results, to be excluded from the long list of distresses occasioned by these tumours.

Prior to the detail of the appended cases, it is necessary to make the following observations.

That, in all of them, treatment (especially by iodine, in tincture and ointment) had been long pursued; that nutritious, unstimulating diet, mild malt liquor, and light wines were allowed; that resort was only occasionally had to *leeching* near, not over, the seat of pain; and still more rarely to cupping on the loins; that *purgatives* and aperients were exhibited only when it was evident that the bowels required to be unloaded; that *setons* over the site of the tumour produced, in several instances, marked benefit; and further, that in all the numerous cases which have fallen under my notice, the *recumbent posture*, and, as far as possible, the avoidance of sexual intercourse, but particularly the former, have been *strictly* enjoined.

Case 1. *Large hard tumour of the uterus, with excessive hemorrhages, and slow but complete diminution of bulk.*—April 22, 1843. Miss ———, aged 48, resides

near Hounslow, and has formerly been under the care of Dr. Blundell and her own medical attendant. First perceived a tumour about the size of a small melon three years ago. It was then low down in the hypogastric region. Her health did not then suffer, but two years since menstruation became profuse, and there was also much uterine bleeding. Iodine was used, and various means were employed to arrest the hemorrhages.

Now the tumour is as large as a moderate sized adult's head, lobulated, and in several of its more prominent portions of *extreme* hardness. It reaches nearly as high as the umbilicus, and protrudes the abdominal integuments, giving to the patient the appearance of a pregnancy of the fifth or sixth month. Has frequent cutting pains in and about the tumour, and is greatly inconvenienced by the weight, pressure, and tension. The growth is not tender to the touch, not even in those portions where there is constant pain. Walking is difficult. Internally the vagina is capacious, and there is much mucous discharge. The os uteri is patulous; and its lips, together with the cervix, are soft and swollen, but without any spots of induration. The most alarming symptom is the hemorrhage; which, without any assignable cause, is sometimes so excessive as to induce long-continued faintness. Cold applications are often employed for several days before the bleedings are arrested. She has lost flesh, and is very weak; her countenance is anxious and very pallid; pulse 110; bowels constipated; appetite bad; she is restless and irritable, and often extremely depressed. Tincture of iodine, six minims, three times a day, in a little sugared water, and the iodine ointment every night over the tumour, were prescribed.

[For some years this patient was watched; frequently the iodine was suspended, and, on account of the exhaustion from the bleedings, other remedies used. In Nov., 1849, the patient's health was very much improved, and the tumour was the size of an orange. In May, 1851, Dr. Ashwell could scarcely make out the presence of any tumour. In March, 1852, the tumour could not be felt at all externally.]

Case 2. *Hard tumour of the uterus, of considerable size; diminution and eventual disappearance.*— [Mrs. B., æt. 48, when admitted under Dr. Ashwell at Guy's Hospital, had a large hard uterine tumour of the size of a child's head. After being in hospital several months, and having received great relief, she left May 15, 1837, but continued as an out-patient and was taking six minims of the tincture of iodine in an ounce of water three times a day. Dr. Ashwell says:]

For several months after June, 1837, I occasionally saw this patient, the tumour continuing slowly to diminish. From that time, I lost sight of her till May, 1853, when she called to consult me about some affection of her lungs attended with cough. On examination externally, *no tumour was perceptible*, even when the fingers were pressed deeply down behind the pubes, and the cervix uteri is quite healthy.

Mrs. B. married in November, 1837, the tumour then being as large as a small melon. She had been pregnant only once, and aborted at two months; this was very soon after marriage. She had ceased to menstruate two years. The tumour decreased rather more rapidly for two or three years after her marriage, and she assures me that for the last four years it has been as imperceptible as it is at present.

Case 3. *Hard tumour of the uterus; treatment by iodine, and eventual disappearance.* (Communicated by Mr. Richard Wedd, of Cheshunt.)—Mrs. ———, aged 46, had tumour on the left side of the abdomen, occupying the space between the umbilicus, the anterior superior spinous process of the ilium, and the symphisis pubis. It was *hard*, not very painful to the touch, and about the size of the fœtal head. The os and cervix uteri presented no abnormal indications. The tumour could be balanced by the fingers placed on the cervix, and when pressure was made upwards, the tumour was distinctly elevated, and protruded the abdominal integuments, so much as to render its outline distinctly visible. External pressure above and around the growth forced down the whole uterus much lower in the cavity of the pelvis, and left no doubt that the tumour was really uterine. Her health was not at first much affected, although she suffered almost constantly, and at times severely, from shooting pains through the uterus, extending to the back, and coursing down to the inguinal region on either side. There were also frequent and large hemorrhages during the catamenial intervals, and menstruation was profuse, lasting six or seven days. There was no interference with defecation, and the bladder was easily relieved.

Mrs. ——— was treated by leeching and opiates for the pain. She was enjoined the recumbent position, and her diet was carefully regulated. Iodine was long taken in the form of tincture, and the iodine ointment was sedulously employed, with some intervals, for nearly two years. At this period the tumour was not diminished in size, and but little in hardness, although there was less pain, and, as her general health seemed giving way, she was advised to go for a lengthened period to the sea side. She removed to the south coast of Devon; and although I did not see her during the absence of two years, I heard occasionally that the tumour was diminishing, and that she improved much in health. On her return to her former residence in Kent, I saw Mrs. ———. She told me that in a few months after her arrival at the sea, the bleedings at the menstrual period and during the intervals began to lessen; that her appetite and general health improved, that within six months from her removal the tumour had sensibly diminished both in hardness and size, and that the pain had subsided in marked degree. On careful examination, now four years from its first recognition, I could discover no traces of the tumour. The abdomen was soft, more flaccid than usual, even when, as in this case, the integuments had been distended by many quickly occurring pregnancies. The os and cervix uteri were entirely natural.

Case 4. Hard and large tumour of the uterus; eventual and almost entire disappearance.—In November, 1840, I met Sir James Clark in consultation on the following case:—Mrs. ———, aged 40, has been married eleven years, and, althoug hpregnancy has occurred, she has never borne a living child. Her health has generally been good, her temperament lively, and her habits active. During the summer of the present year Mrs. ——— had a severe illness, primarily inflammation of the peritoneum, but followed by fever. In the latter part of September, 1840, she first discovered an enlargement in the hypogastric region, immediately above the brim of the pelvis and towards the left groin, which was tender, but not very painful. Soon afterwards, however, it became larger; and as there were dartings about the growth and occasional paroxysms of severe suffering, a careful examination was made (Nov. 20), *when a tumour of considerable induration* was discovered. It had risen three or four inches towards the umbilicus, and although it passed a little to the right of the mesian line of the body, by far the greater portion was in the left hypogastric region. The cervix uteri was swollen, patulous, and indurated in several spots. There was no difficulty in relieving either the bladder or the intestines, but there was some emaciation, and the pain was sufficient to induce her to keep almost constantly the recumbent position and confine herself entirely to the house. A light nutritious diet of fish, chicken, and mutton, with some wine and water, was ordered; a mild aperient pill, and the following mixture were also prescribed:—Ammoniated tartrate of iron, one drachm; tincture of iodine, half a drachm; compound tincture of cardamoms, one ounce; distilled water, seven ounces; two tablespoonfuls to be taken three times a day. The local measures were, leeches on alternate mornings to the tumour, the use every night of the hip-bath, and the constant application, by means of linen compresses covered by oiled silk, of the poppy fomentation.

Such was the plan pursued for nearly five weeks, at the end of which time the growth had lessened considerably, and there was but slight pain. At this period (January, 1841) the weather was intensely cold, and to derangement of the health consequent on this state of the atmosphere, but more especially to excitement, an unfavourable change both in her health and in the tumour was clearly attributed.

Greater caution, however, was observed, and the morbid enlargement, by the end of February, did not exceed the bulk of a large Seville orange; it having, in November, equalled in size a fœtal cranium at the full period of gestation.

During many subsequent months, iodine, internally and externally; mercury, to the extent of producing slight salivation; quinine, and various stomachics and cordials, were exhibited; and, in April, the tumour had subsided so much, and appeared to be altogether in so quiescent a state, that a seton was inserted over its site, in the left hypogastric region. Some weeks afterwards a large seton was made, nearly in the same situation, by Dr. Kirby, of Dublin. Sea-bathing was recommended, and when I last saw the lady, in August, 1841, her health was greatly restored; the tumour was so much lessened as to have sunk quite within the pelvic cavity, the pain having almost entirely ceased; and the cervix was much more healthy. In

1845, and subsequently in 1851, I was informed that not a vestige of the tumour remained, and that the general health was exceedingly good.

Remarks.—I could narrate several more examples of nearly entire disappearance of these large tumours, and a still greater number where, after having diminished very considerably in bulk, they have, for many years, remained entirely stationary. In both classes of cases the attendant symptoms have passed away, and there has been little or no interference with the comfort of life. All the cases which have fallen under my care prove the value, where any doubt exists of the precise character of uterine growths, of cautious and long protracted treatment. The continuance of pain, hemorrhage, and emaciation, with a stationary condition of the tumour, although unfavourable, ought not to arrest treatment; while, on the contrary, any diminution of these painful accompaniments should be regarded as sufficiently auspicious to encourage a further continuance of remedies. In *every* similar case the means recommended may not be attended with like success; still, in by far the greater number, I am strongly of opinion their employment will be decidedly efficacious, if not entirely curative. We are not expected to determine what may be the final issue of many uterine tumours, nor to deny the possibility of eventual malignant development, nor to promise a cure; but, judging from the narrated cases, and many others which I am sure have occurred to different practitioners, I may truthfully declare, that in many such thus treated, entire disappearance, or, at least, an arrest of further growth will be the result.—*Lancet*, *Feb.* 18, 1854, *p.* 180.

151.—ON THE EFFICACY OF THE WATERS OF KREUZNACH ON UTERINE TUMOURS AND HYPERTROPHIES.

By Dr. E. H. Sieveking, Assistant Physician to St. Mary's Hospital.

[The water from the chief spring is described as being perfectly clear and transparent when fresh, of a temperature of 55° Fahr, and of a salt and bitterish taste. After a time it becomes dull, and brownish flocculi form and are precipitated.]

The analysis of this water by Bauer, as given in Professor Osann's great balneological work, shows sixteen ounces of the water to contain above ninety grains of mineral constituents, distributed in the following manner:—

Chloride of sodium . .	72.922
Chloride of potassium . .	0.971
Chloride of lithium . .	0.075
Chloride of calcium . .	13.276
Chloride of magnesium . .	0.251
Bromide of sodium . .	0.307
Iodide of sodium . .	0.003
Carbonate of magnesia . .	1.351
Carbonate of strontia . .	0.683
Carbonate of baryta . .	0.299
Carbonate of iron . .	0.199
Carbonate of manganese .	0.009
Alumina	0.021
Silica	0.313
	90.680

The specific gravity of the water is 1,004.

The process by which the chloride of sodium is extracted from the water necessarily alters the relation of the constituents found in the bittern; while it removes almost all the chloride of sodium, it leaves those elements to which the peculiar effects of the Kreuznach waters are particularly ascribed in a much more concentrated form. This bittern or mother ley is the semifluid residue found in the evaporating pans; it presents a brownish yellow colour; it is translucent and clear, and has a soft soapy feel: its sp. gr. is 1,307 to 1,314. It smells like marine algæ, and has an intensely pungent and acrid taste, which is not effaced from the lips and tongue for some time after it has been applied. It is very deliquescent—a property

which renders its transportation in anything but china or glass vessels impossible, as it gradually oozes and makes its way through all porous materials, and through the strongest casks and earthenware jars. It is rarely employed in the concentrated form, but merely as an adjunct in ordinary water baths, or with the water of other mineral springs. Of late, the bittern has been still further evaporated to dryness, in which state it forms an amorphous light brown mass, of which I present a specimen to the society. Its taste and properties are the same as those of the mother ley, but it offers the advantage of being much more portable. The following is an analysis of the mother ley by Osann. He found sixteen ounces to contain 2625.75 grains, or about one-third of solid matter, distributed in the following manner:—

Chloride of calcium	1577.71
Bromide of calcium	388.72
Bromide of potassium	92.82
Chloride of magnesium	38.44
Bromide of sodium	154.10
Chloride of sodium	60.34
Chloride of potassium	17.30
Alumina and suboxide of iron . . .	35.66
Crenic and apocrenic acid, and two peculiar resinous matters, with traces of iodine .	216.16
Water of crystallisation and loss . . .	44.50
	2625.75

The quantitative analysis of the mother ley varies in almost every examination that is made, owing to the accidental variations of condensation, and fortuitous changes produced by the process of extracting the common salt; but all agree in showing the presence of a large proportion of bromide of calcium. An analysis given by Dr. Prieger, in a work entitled 'The Mineral Waters of Kreuznach,' published by Mr. Churchill in 1846, exhibits a considerable difference in the relation of the constituents; it is as follows:—

Bromide of calcium . .	24.12
Chloride of calcium . .	9.29
Bromide of magnesium . .	0.48
Iodide of magnesium . .	0 18
Chloride of potassium . .	0.80
Chloride of sodium . .	1.28
Water and loss . . .	63.85
Total . . .	100.00

[We need hardly say, that it is in scrofulous diseases of all kinds that these waters are more especially recommended, especially in cases of tumours or swellings where the absorbents need a stimulant; but it is in diseases which are commonly not amenable to treatment that the benefit is most remarkable, such as *fibroid tumours of the uterus and ovaries*, and other *hypertrophic conditions of these organs*.]

It appears from the cases recorded by Dr. Prieger, jun., in an interesting pamphlet recently published, that under the use of the Kreuznach waters they may be softened, reduced, and even entirely dispersed. There is nothing in the structure of the tumours which renders such a result improbable. Until they have become very large, they are freely traversed by blood-vessels, the agents of all advancing or retrograde metamorphoses; and as long as the organic connexion between the morbid growth and its matrix is freely kept up, we may reasonably hope that our dynamical remedies may exert an eliminating effect, provided we can hit upon an agent likely to stimulate the system in a manner proportionate to the existing disease. Any one who will take the trouble to go to the museum of St. George's Hospital, and examine some injected specimens of uterine fibroid tumours, will find that they may be plentifully supplied with blood-vessels. The more extensive their growth, the more they seem to be placed beyond the pale of the organisation; and they

gradually become, like foreign bodies, a source of mechanical irritation, or passive obstacles to the organic functions: they then necessarily cease altogether to react upon internal remedies. But I hold that the structure of these fibroid tumours is a further explanation of the comparative facility with which they yield to the resolvent action of the Kreuznach waters. They are, as I have attempted to show elsewhere, essentially an hypertrophic condition of the true uterine tissue, differing from it by that metabolic power which gives a morbid impulse, but identical with it in those points which the microscope and chemical reagents reveal. I the more confidently put forward this view, as I find it corroborated by a recent writer in the Reports of the Pathological Society for 1852—3. Dr. Bristowe there demonstrates in a most satisfactory manner, that the so-called fibrous tumour is absolutely identical in point of structure with the walls of the uterus, whether examined in the unimpregnated or impregnated condition.

The evidence which Dr. Prieger, jun., brings forward in proof of these tumours being amenable to treatment by the Kreuznach waters, is of a character to demand our serious attention. Those who will study his paper, will be constrained to conclude that he thoroughly understands his subject, and that he is not led away by that species of enthusiasm which frequently prompts the administrators of favourite remedies to regard them as agents of an universal efficacy. His diagnosis is cautious and well founded; and he gives us accurate statistical details of his experience.

The results of the application of the Kreuznach waters in 86 cases of hypertrophic states and fibroid tumours of the uterus and its appendages, which have been under his care, are as follows:

Thirty-one were entirely cured; of these, 2 were hypertrophy of the entire uterus; 16, partial hypertrophies of the uterus; 6, fibroid tumours of the uterus; and 7, tumours of the ovaries. In each case, no trace of the disease remained at the conclusion of the treatment.

Twenty-nine were partial recoveries; the troublesome symptoms having been removed or ameliorated, and the swelling or tumour having been much reduced. Of these, 3 were hypertrophy of the entire uterus; 4, partial hypertrophy of that organ; 9, fibroid tumours of the uterus; 5, fibroid tumours of the ligaments; 6, ovarian tumours; and 2, ovarian tumours complicated with hypertrophy of the uterus.

Nineteen cases were benefited so far that the continued growth of the morbid formations was arrested, without any or but a trifling reduction in size. Of these, 2 were hypertrophic states of the uterus; 8, fibroid tumours of the uterus; 4, fibroid growths of the uterus; and 5, ovarian tumours.

Seven cases presented no change whatever either in the size of the tumours, or in regard to the morbid symptoms.

The method pursued and the duration of treatment by the Kreuznach waters necessarily varies according to the duration and extent of the disease, and according to the constitution of the individual. One remarkable and well authenticated fact regarding its influence upon the organism, is the continuance of the peculiar action it has set up, long after that action has been initiated, and the remedy has been discontinued. Dr. Prieger has repeatedly observed that after the conclusion of the course in August or September, the progressive diminution of the local affection continues until the following spring. Thus in a lady who had employed the baths for eight weeks, on account of an ovarian tumour, previous to the 1st September, 1851, Dr. Prieger was unable to perceive a notable diminution of the tumour when she quitted Kreuznach, nor could her own medical attendant in the following January detect a marked change; still, a few months later, the tumour was found to be much reduced, and she had made use of no remedies in the interval but an occasional local application of the Kreuznach water.

We have alluded to the different modes in which the Kreuznach waters are exhibited. A few more detailed remarks on the subject may be acceptable. When administered by the mouth, the water may be taken by itself, or combined with milk, whey, or other mineral waters; and either warm or cold; the quantity varies from one to six beakers, or from a few ounces to two and more pints; it is taken in the morning at short intervals, and moderate exercise is enjoined during the potations. The baths are commonly employed tepid at a temperature of about 90° F.; at the commencement of the course the patient is ordered the use of the water only, while its power is subsequently and progressively increased by the addition of more or

less of the bittern. Dr. Prieger informs us that it is usual to commence with one quart, or about 4 lbs. of the latter for baths for adults, while a less quantity, proportioned to the age of the individual, is used for children. If the inspissated bittern be employed, we should use from one to two pounds for the bath of an adult. The increase in the quantity of bittern in the baths must be gradual; and in the same way, after the climax has been reached, it is progressively diminished; "for the whole object," to use Dr. Prieger's words, "of this management would be destroyed by a too quick reduction of the effective power, and before the accustomed irritation of the skin" (a species of critical eruption) "had subsided." The bath is rarely used more than once a day, or for more than from five to twenty minutes at a time; its action is accelerated by friction of the affected parts, or of the whole body. Rest is enjoined after the use of the bath in very delicate individuals, while gentle exercise is recommended to those of a corpulent or more robust habit. The topical applications vary equally in strength and duration according to the constitution of the individual patient; and when applied as gargles, as enemata, or as vaginal injections, we must necessarily use some judgment in regulating the minutiæ of temperature, concentration, and frequency of exhibition.—*Association Med. Journal, Dec.* 2, 1853, *p.* 1059.

152.—ON THE EXCISION OF OVARIAN TUMOURS.

By John E. Erichsen, Esq, Surgeon to University College Hospital.

[At a meeting of the North London Medical Society, Mr. Erichsen read a paper on the excision of ovarian tumours. After some introductory remarks, he related the case of a lady, aged 65, and the methods employed to form the diagnosis, and determine the selection of the mode of operation.]

The room having been warmed to a temperature of 80°, the patient was laid on a table of convenient height, covered with doubled blankets, so that the legs hung over the end of it, chloroform administered, and the bladder emptied. (The bowels had been cleansed out with a purge on the preceding day.) The operation was commenced by an incision about five inches in length, made in the linea alba from the umbilicus downwards, the tissues carefully incised, and the peritoneum opened, when the tumour presented itself. Into the part on the left side, that was soft and fluctuating, a large trocar was introduced, and about a gallon of very thick, pasty, dark-coloured fluid drawn off. The hand was now introduced into the cavity of the abdomen, and the more solid part of the tumour (which extended high up on the right side, lying against the liver) was drawn down and brought out through the wound. In doing this, a few adhesions, that passed between the anterior wall of the abdomen and the tumour, were broken through. The mass, which was of considerable magnitude, was now lifted out of the abdomen (the intestines, being protruded, were passed back with soft warm cloths), and was found to be connected by a broad attachment to the right broad ligament. This pedicle was short, wide, and composed principally of large blood-vessels, with some connecting cellular tissue; it was drawn well forwards. A nævus-needle, armed with strong whip-cord, was passed across it, care being taken to avoid any of the blood-vessels. The peritoneal investment of the pedicle was then dissected off to the extent of about a quarter of an inch in breadth all round, and the whip-cord ligature firmly tied on either side along the line. The tumour was then detached by cutting across the pedicle, half an inch above the ligature. The wound was closed by a series of interrupted sutures, closely applied, and at the lower part by two hare-lip pins, with figure of 8 sutures; round these the ligatures of the pedicle were firmly twisted so that the cut stump projected out of the abdomen between the lowest pin and the inferior angle of the wound. The abdomen was then supported with cross strips of plaster and a bandage. Mr. Erichsen then detailed the after treatment adopted. The patient left her bed on the sixteenth day.

He considered that the case illustrated well the surgical management to be adopted. The principal points in the operative procedure, that in his opinion required attention, are to regulate the length of the incision to the size and character of the tumour. The more fluid the tumour, the less extended need the incision be. As the solid part of the mass must necessarily be extracted entire, an incision for its *ablation* must be proportioned to its magnitude and shape, and the surgeon should

not advocate either the small or large incision exclusively. The ligature of the pedicle is an important point, as unless this be properly practised there will be no inconsiderable risk of the supervention of secondary hemorrhage. It is best done by transfixing with a nævus-needle, carrying a whip-cord ligature, and tying on each side as tightly as possible. The dissecting downwards of that portion of peritoneal investment of the pedicle, across which the ligature is tied, appears to be of much importance in preventing the constriction and sloughing of the otherwise included line of serous membrane, and thus lessening the dangers of peritonitis. It is a part of the operation, however, attended by some risk, by the chance of wounding the blood-vessels, which are here thin, walled, and large, that they may be avoided by careful manipulation. After tying the pedicle, it is of considerable moment that the ligatures should not lie in the peritoneal cavity, and that the stump should not slough off within the cavity of this membrane, as under each circumstance peritonitis of a severe or fatal character would probably ensue. All this is best avoided by drawing the pedicle well forward, so as to project above the wound, and attaching the ligature to the hare-lip pins, with which the lower line of the incision is closed. The after treatment consists in keeping the patient in a warm room, giving a liberal supply of ice, with opiates to tranquillize the system, and arrest peristaltic action, to draw off the urine, and not to attempt to relieve the bowels, which may be left confined for many days without inconvenience to the patient. In considering the subject of ovariotomy, two questions present themselves—first, as to whether the operation is a sound one, and ought to be retained in practice; and secondly, if retained, in what class of cases it should be had recourse to. In answer to the first question, the course taken by ovarian tumours varies greatly. In some instances these growths do not appear to be incompatible with prolonged existence and a fair share of health; in other instances, again, after remaining quiescent for some length of time, they assume considerable activity of development, and interfere so seriously with the other abdominal organs, and with the general operations of the economy, that life is attended with great misery and discomfort; and in a third class of cases they rapidly and steadily run their course to an unfavourable termination. After a time, in the majority of instances, the tumour may be materially lessened in bulk by tapping; but when once this operation has been performed, it will require to be repeated with increased frequency, the intervals between each succeeding tapping being diminished, and then a fatal termination at a comparatively early date may be looked for. Mr. S. Lee states that of 46 patients who were tapped, 37 died, and only 9 recovered, and that of the 37 who died, more than one half did so in four months from the first tapping; 27 out of the 37 in the first twelve months, and of these 18 were only tapped once. The objection had been raised against ovariotomy that the mortality from it was so high as not to justify a surgeon in performing it. Undoubtedly a very high rate of mortality after an operation would constitute a very serious bar to its performance, and the more so if it could be shown that the disease for which it was practised was not necessarily fatal, or even a very serious one. Thus Mr. Phillips had collected the particulars of 61 cases in which ovarian tumours were extracted; of these 35 were successful, and 26 died. Mr. Lee gave 90 cases; of these 57 recovered, and 33 died: and Dr. Robert Lee, the most recent writer on the subject, had collected 102 cases of ovarian extraction, of which 60 did well, and 42 terminated fatally. From these statistics it would appear that the mortality after the removal of ovarian tumours amounted to rather more than one in every three cases. This appeared to Mr. Erichsen not to be excessive, when compared with the result of operations, various severe surgical injuries, or scrofulous diseases. In the next place, ought ovariotomy to be performed in all cases, or even in the majority of instances of ovarian disease? or ought it to be limited to a few and exceptional cases, and practised as a last resource? The most ardent advocate for this operation would scarcely, he thought, advise that an attempt should be made to extract the ovarium from every woman labouring under tumour of this structure, but would rather recommend the employment of palliative treatment until the growth had begun to interfere seriously with the comfort of existence, or with the healthy action of the abdominal organs, the patient wasting, suffering much discomfort from her size, with difficulty in breathing, repeated vomiting, gastric irritation, &c. He confessed he saw no chance of giving relief or of prolonging her existence except by the removal of the tumour; medical treatment

was of no avail in those cases, and tapping only gave temporary relief; therefore one must either leave the patient to her fate, or have recourse to the ablation of the tumour, which, it had already been shown, might be done with the prospect of success in nearly two cases out of every three. The question of diagnosis had to be considered in two of its bearings: first, as to the existence of such adhesions between the enlarged ovarium and the other abdominal organs as to render the extraction impossible; and secondly, the diagnosis between ovarian and other abdominal tumours. Such adhesions as would prevent extraction having been met with in rather more than one-third of the whole number of cases operated on,—according to Dr. Lee, in 60 out of 162 cases,—the diagnosis of this complication was of extreme importance. Its existence might in general be suspected when it was ascertained that the patient had been the subject of attacks of peritonitis; when the abdominal tumour did not appear to change its position on the patient taking a deep inspiration and then expiring freely; and when, on the patient raising herself into a sitting posture, the sac did not tend to move forwards into the space between the recti muscles. So also much light might be thrown upon this important point by ascertaining the existence of a crepitant or crackling sensation between the anterior abdominal wall and the tumour, and more particularly when the tumour, being tapped, drew down with it the abdominal parietes, or sunk into the pelvis without exercising any traction on those parts. The conditions also of the pelvic viscera,—viz., the bladder and uterus, as ascertained by examination with the sound, might tend to show whether connexion existed in this quarter or not. But in other instances, and more particularly when the mass is bound down posteriorly, there was no probability of determining this point, and then the surgeon might, to his great annoyance, find that after laying open the abdomen the operation could not be completed, and the tumour require to be left. In those cases in which there was any reason to suspect the presence of adhesions, it was a wise precaution to make a small exploratory incision into the abdomen, through which the fingers or hand might be introduced, and the connexions of the tumour examined. If these were too extensive to admit of removal, the aperture might be closed, and possibly the patient might escape without any very serious consequences ensuing, as in these cases the peritoneum had in a great measure lost its character as a serous membrane, and was not so susceptible of the diffuse and destructive forms of inflammation that would otherwise be likely to occur in it.—*Lancet, Dec.* 24, 1853, *p.* 611.

153.—*Arrest of Consecutive Hemorrhages in Cancer of the Neck of the Uterus, by the Perchloride of Iron.*—We have employed, observes M. Remilly, the perchloride of iron to arrest the uterine hemorrhages which so frequently accompany cancer of the neck. It is administered by injections, in the strength of 15° of the perchloride to 250° of water. The dose required is usually 15 grammes of the perchloride (5 drachms English). A woman, aged 60, suffering from cancer uteri, voided daily large clots of blood from the vagina, some as big as the fist. Two injections (Sept. 12), at the interval of five minutes, sufficed to arrest the hemorrhage for three days. On the 15th, the blood flowed again, when two fresh injections were administered with success. On the 16th and 17th, the injections were continued without any recurrence of hemorrhage. On the 18th, the patient, who had lost no more blood, became pale and faint after the second injection,—symptoms which seemed referrible to the remedy, as the external organs of generation were temporarily swelled. She soon, however, recovered; and, from October 26 to November 19, has remained free from any return of the bleeding.

A second patient, aged 49, suffering from soft, vascular, fungous growths from the os uteri, accompanied with a discharge of dark fetid blood from the vagina, was subjected to the same treatment. The first injection produced an immediate disappearance of the discharge. The day following there was a second discharge, which was not arrested by the injection, but the patient declared that the instrument had been badly introduced. The next day the remedy was used with more care and with complete success.

A third and a fourth case are related by M. Remilly, illustrating the decided benefits ensuing from this plan of treatment; and he remarks, that not only does the

injection relieve the patient from troublesome and often offensive discharges, but that it retards the progress of anemia, and prolongs her existence. It is impossible to say what effect the perchloride may have upon the future progress of the cancerous disease; but it may assist, by arresting weakening losses of blood, in rendering more decidedly beneficial tonic and ferruginous remedies employed so often without the least success in combating cancer and its complications.—*Bull. de Thérap.*—*Medical Times and Gazette, Feb.* 25, 1854, *p.* 191.

154.—ON CANCEROUS AFFECTIONS OF THE OS UTERI.

By Dr. Robert Johns, A.B., &c., Chairman of the Midwifery Court of Examiners of the R.C.S., Ireland.

[In a paper read before the Surgical Society of Ireland, Dr. Johns draws the following deductions from his investigations into the best modes of treating these diseases.]

1. That cancerous affections, when confined to the cervix uteri, are in many cases successfully treated by removal.

2. That the only chance of preventing a return of the disease is to remove in a healthy part of the cervix from which it grows.

3. That the best and most expeditious operation is amputation of the cervix in a part free from disease.

4. That as hemorrhage is very likely to follow such an operation, a ligature ought to be thrown around the cervix, as high as possible, for twenty-four or thirty-six hours before amputation.

5. That cauliflower excrescence is a disease to which this treatment is very applicable; as it rarely if ever extends beyond the neck of the uterus, and as it is one of the forms of cancer which is least liable to return after the excision of the parts.

6. That amputation of the cervix, in hypertrophy and such like affections of this part, which are curable by simpler means, is not justifiable.

7. That extreme prostration alone, or enlarged superficial inguinal glands, ought not to be a bar to operation.

8. That as inflammation in many forms is likely to follow this operation, an appropriate preventive treatment ought to be adopted.

9. That the use of the actual cautery expedites cicatrization after the removal of the cervix.

10. That as amenorrhœa and dysmenorrhœa are likely to follow on extensive ulceration of the os and cervix uteri, and also when these parts have been removed, the uterine sound ought to be passed from time to time during cicatrization, and for some time afterwards.

11. That with a view to correct the cancerous diathesis, the patient might be put under a course of treatment for some time previous to, and subsequent on, the operation.

12. That a particular form of vertigo is a frequent symptom, and an important diagnostic of uterine disease.

13. That as females suffering from uterine affections are very prone to intercurrent affections, which sometimes prove fatal, every means should be adopted to prevent their occurrence.

14. That in all cases of suspicious vaginal discharge, manual examination *at least* ought to be employed.—*Dublin Quarterly Journal, Feb.* 1854, *p.* 110.

155.—*On the Galvanic Cautery in the Treatment of Uterine Disease.* By Mr. Ellis.—[The actual cautery of the ancients has given way to the more painful potential cautery of the moderns. M. Jobert was the first to recommend its application to the uterus in situ in chronic diseases of that viscus.]

Mr. Ellis alludes to the researches of Mr. Marshall, who, in his investigations on 'Electric Heat in Surgery,' appears to have been the first who corroborated the views of the ancients respecting the remedial agency of the actual cautery. This gentleman used only a heated wire, which necessarily acted upon a small surface, and was consequently inefficient. The experiments of the author soon led him to adopt a

better method, by which he was enabled to concentrate the heat evolved over a considerable surface,—an important element in cauterization by electric heat. The instrument he employed was a good-sized silver catheter, straightened out, with the end cut off, which formed the body of the instrument. It was then slit open at the upper end and broached, so as to form a socket for the porcelain cauterizer, and also to allow the internal wires to pass out. Within the catheter are placed the two conducting wires, insulated, they being at one end connected with the wires of the battery, and at the other with a piece of platinum wire, which is coiled round the porcelain cauterizer. The battery employed is Groves', of four or five cells, and of these two are required to heat the porcelain to whiteness, which degree of heat is essential. From this simple contrivance the instrument derives its principal value, the heat being thus both intense and permanent. When ready for use it is entirely under the control of the surgeon, a matter of vast importance in its application. The patient to be operated upon should be in the usual obstetric position, and the batteries and wires concealed from her, so that she should not have any idea of the nature of the remedy. A good light and speculum are essential, and the speculum best suited is the common circular glass one, or one of glass coated with gum-elastic. Neither the two-bladed metallic nor the conical glass forms are at all suited; the former because it allows all the heat from the blades of the speculum to be concentrated on those portions of the vagina which bulge between them, and the latter because it is liable to be easily expelled by the vagina. A full view of the os and cervix uteri having been obtained, the os should be cleansed with a piece of cotton or wool, and when the cautery has become intensely heated, it should be steadily introduced and quenched in the diseased tissue, the duration of the application and the depth of its introduction depending upon the effect required. The eschars thus produced are marked with a whitish-yellow border, and the cervix often visibly contracts under the application of the cautery. The author insisted upon heating the porcelain to whiteness, otherwise slight hemorrhage may occur, from the instrument dragging off a portion of mucous membrane, which invariably adheres to the instrument under such circumstances; the surgeon should also remember that the degree of the eschar is entirely under his control. He then stated that the cases where it was applicable were those of induration of the os and cervix uteri, of ulceration of the os, and in prolapsus uteri, and also in prolapsus of the anterior wall of the vagina.—*Lancet*, *Nov.* 26, 1853, *p.* 503.

156.—SPONTANEOUS CURE OF POLYPUS UTERI.

By Dr. F. H. Ramsbotham.

[Three cases of this description have been lately published, one by Mr. Canney detailed in the succeeding article (157) and two others by Dr. Ramsbotham in the 'Med. Times and Gazette' for Jan 22 and Feb. 5, 1853 (vide *Retrospect*, vol. xxvii.) Dr. Ramsbotham relates another instance as follows:

Dr. R. was called to a case under Mr. Stephenson, of Dalston. The patient, aged 33, was the mother of three children, and had been lately the subject of menorrhagia and leucorrhœa.]

From the time the menorrhagia began to annoy her she had been subject at intervals to what she then considered a descent of the womb. She was in the habit of returning the protruded substance, allowing herself two or three days' rest, when the inconvenience was for a time suspended. On any exertion, however, it recurred, and on each such occasion she treated herself in the same manner. She now believes this substance was the tumour; and of this, indeed, I think there can be little doubt. She states also, that on the fourth day after her last labour, the womb came down, remained external a whole day, and was returned by the medical gentleman then in attendance. Whether this substance was really the uterus, or the polypus enlarged by the growth of pregnancy, I have had no opportunity of learning, but I suspect the latter was the case.

Mr. Stephenson was first called to her about a year ago, when she was suffering from common continued fever, being much debilitated, and greatly blanched. In a week she was free from fever, and continued to follow her ordinary mode of life, *until* the end of last September, when an attack of diarrhœa induced her to seek his

advice again. The hemorrhage was now almost incessant; she complained of a distressing sense of weight at the vertex, much pain in the lumbar region and groins, particularly the left, and a sensation, when she sat down, as though the lower part of her bowels was being pressed upwards. She suffered also from violent bearing-down pains when she stood, and was far more easy in a recumbent position. In the early part of October she became again the subject of continued fever, attended by hemorrhage, headache, and severe vomiting. During one of her attacks of sickness, a fleshy mass was protruded from the genitals, but without pain; this she took to be the uterus, and passed it up again. Mr. Stephenson was summoned to her in haste, and the following I give in his own words:—

"On examination I found a soft, smooth, loose membranous body, occupying very nearly the whole length of the vagina, of a pyriform shape, free at the lower end, and attached to the uterine structure above, at about half-an-inch beyond the mouth. I could pass my finger completely round it, within the hard projecting uterine neck, and trace its narrow root. By gentle traction I found it give a little, and was able to bring it down till its free end reached about two inches external to the vulva. That part of the abnormal growth external to the body presented the appearance of a pale, glossy, membranous bag, not unlike *prolapsus vesicæ*; and, when rolled between the thumb and index finger, felt very like thick layers of mucous membrane. The woman expressed no sense of pain when it was pinched. There was no hemorrhage at this time. Having concluded that it was a case of polypus, and that nature was making an effort to cast it off, I resolved upon leaving it in her hands for a short time, and waiting the result, unless symptoms arose calling for active measures.

"In twenty-four hours, the mass external to the body had assumed a shrivelled appearance, was dusky in colour, and had begun to emit a gangrenous odour. On traction, it was brought down about an inch further. On the next day it had become perfectly black, and the odour it exhaled was almost intolerable. As the patient evinced symptoms of great exhaustion, I recommended a consultation with Dr. Ramsbotham."

I saw her at 3 p.m. on the 25th. The tumour had then been down nearly three days; the part external was as large as a man's fist; it was highly putrid, and very readily torn; the attachment by the stem within the cervix uteri still remained perfect. The woman was of waxy paleness; her countenance bore a distressed, cadaverous expression; the pulse was quick, jerking, and easily compressible; tongue and lips moist and pale; and altogether she displayed unequivocal marks of having been for a long time the subject of copious losses of blood. I passed two fingers of my left hand well within the os uteri, carried their points up to the attachment of the tumour, and with very little trouble separated the diseased mass from the healthy structures, by tearing it away. When brought away it was about seven inches in length and five in breadth, having the ordinary appearance of the fleshy polypus, partially destroyed by putrefaction. The removal occasioned neither pain nor loss of blood. "About four hours after the operation," says Mr. Stephenson, "the patient expressed herself as being greatly relieved, and seemed to mend and rally from the moment of its removal."

The bowels had not acted for six days, in consequence of the medicine having been invariably rejected by vomiting. On the separation of the tumour, however, the sickness ceased, and the sulphate of magnesia, dissolved in infusion of roses, was speedily efficacious. The tinctura ferri sesquichloridi was afterwards administered, and she was ordered a generous diet and a pint of porter daily. For the first fortnight there was a pale straw-coloured discharge, along with which some shreddy membranous portions came away, evidently the remains of the neck of the tumour.

Four days after the removal the menses returned, at the regular period, but in so small a quantity as "scarcely to stain the linen." On November 23, they again appeared, and continued flowing only three days, though copiously while they lasted. In the interval there was a small quantity of pale yellow discharge. Mr. Stephenson made an examination on Nov. 16. The os uteri was then sufficiently open to admit the passage of the first joint of the finger, but "nothing like the remains of a polypus could be detected." She came down stairs on that day, is rapidly gaining strength and colour, and says herself she has not felt so well for more than two years.—*Med. Times and Gazette, Dec.* 24, 1853, *p.* 648.

157.—*A Case of Large Polypus of the Uterus Complicated with Inversion.* By GEORGE CANNEY, Esq., late House-Surgeon to the University College Hospital.—M. H., a stout, fair-complexioned woman, many years married, but without family, has suffered severely during the last seven years from uterine disease, attended with severe pain, floodings, and extremely offensive vaginal discharges. On the 6th of October, 1848, she was seized, while in bed, about seven o'clock in the morning, with violent expulsive pains, which in a short time, as she thought, protruded the whole mass of the diseased womb through the os externum. Her midwife was sent for, and for many hours made fruitless attempts to return the mass. About five in the evening, I was requested to see her, and found her faint from loss of blood, the surface of the body, and the external genitals, being quite blanched. Protruding from the os externum there was an enormous pear-shaped mass, of a red colour, and smooth, shining surface, which was a perfect cast of the body and neck of an enlarged uterus (the narrow portion or neck of the tumour being the lowest), having a dark sloughy appearance; and, to complete the deception, the finger could be passed for nearly an inch into a depression in the lower portion of the tumour. As a catheter, however, passed into the bladder in the usual course, I at once pulled down the mass until the forefinger could be passed over its large extremity into the vagina, when the large end of the polypus could be distinctly felt connected with the inverted fundus of the uterus by a short thick pedicle. A ligature having been applied, the pedicle was divided with a pair of scissors, and the surface of the uterus being found free from any further growth, the inverted fundus was carefully replaced. As soon as the womb was restored to its natural condition, the ligature came away; nevertheless, there was no further flooding; the patient never had a bad symptom; and the gentleman under whose care she was placed reported to me, at the end of the week, that she had resumed her household duties.

The tumour was of a simple fibrous texture, and weighed twenty-four ounces.—*Med. Times and Gazette, Nov.* 12, 1853, *p.* 498.

158.—*On the Extraction of Polypi from the Uterus.*—[In a paper by Mr. GEORGE CANNEY, of Bishop Auckland, on this subject, read before the Royal Medical and Chirurgical Society, various opinions were elicited on the different modes of extracting these growths from the uterus. Mr. Canney recommends *excision* rather than the ligature when the polypi are not large. Dr. TYLER SMITH prefers the *ligature;* Mr. HODGSON says the *torsion* is sometimes both better and safer than either excision or the ligature. Dr. COPLAND gives us an interesting case to show the effects of *biborate of soda.* He says]

Polypi, or fibrous tumours, on the inner surface of the uterus, were occasionally thrown off without resorting to the ligature, or any other operation. Some years ago he had been called in consultation to the case of a lady suffering from constantly recurring uterine hemorrhage. A tumour was protruding from the os uteri. The question of removal was discussed, and it was decided that biborate of soda should be given, with a view of producing the contraction of the uterus, by which the growth might be thrown off. The medicine was given in large doses, and continued for two or three days. The uterus contracted powerfully, and the tumour was expelled. All the symptoms abated for three or four days, when a second tumour presented itself. Dr. R. Lee then joined the consultation, and it was determined that the use of the soda should be persevered in. The result was that this second tumour, like the first, was thrown off, and the patient recovered. He could speak from his own knowledge, that she was alive and well 13 or 14 years afterwards. This might not have been a case, strictly speaking, of polypus of the uterus, but it was certainly one of a tumour under the villous coat of that organ, which was thrown off by the contractions of the uterus.—*Lancet, April* 8, 1854, *p.* 389.

159.—ON THE SOURCE OF HEMORRHAGE IN PARTIAL SEPARATION OF THE PLACENTA.

By DR. F. W. MACKENZIE. (Read before the Medical Society.)

There are few subjects in obstetric medicine of greater scientific interest and none

of greater practical importance, than that of the anatomical source of hemorrhage in cases of partial separation of the placenta. Upon its right understanding may be said to depend not only the whole question of the extraction of the placenta, in cases of placenta prævia, but also the general treatment of uterine hemorrhage in all its several forms; and yet there is probably no subject upon which so much diversity of opinion prevails, or in regard to which mere speculative notions have been more freely allowed to take the place of original observation. With the view of aiding in the solution of this question, I am induced to submit to the Society some investigations which were especially undertaken for the purpose of elucidating it.

On referring to the public writings of various obstetric authorities, it will be found that three different opinions prevail at the present day respecting the anatomical source of hemorrhage in cases of partial separation of the placenta. The first affirms, that it is principally or wholly uterine; the second, that it is principally or wholly placental; the third, that it is both uterine and placental, the blood escaping partly from the exposed uterine, and partly from the detached placental surfaces.

Further, it will be found that uterine hemorrhage, whether occurring in connection with partial or entire separation of the placenta, is generally considered to be principally venous. "Uterine hemorrhage," says Dr. Simpson "after the separation of the placenta, in any of the stages of labour, is *not arterial* in its character. The utero-placental arteries are numerous, but so long and slender as to become readily closed; first, by the tonicity of their coats; secondly, by contraction of the uterine fibres upon the course of these vessels themselves, as they pass through and amid the uterine structure; and thirdly and principally, by the changes in their tissues produced by the mechanical rupture of their coats,—*torn arteries* being little, if at all, liable to bleed, and the placenta being separated by a true process of *avulsion*." "When the placenta is only separated," says Dr. Radford, "the blood which is lost is chiefly venous." "When the placenta is separated partially from the uterus," Dr. Murphy observes, "any hemorrhage must arise chiefly from the broken veins, and not from one but from both of their divided extremities." "It is," says Dr. Robert Lee, "from the great semilunar valvular-like venous openings, in the lining membrane of the uterus, and of the arteries which are laid open by the separation of the placenta, that the blood alone flows in uterine hemorrhage." I have made these quotations for the purpose of showing, that the question at issue is one of a very complex character. It is one which has reference, not only to the organ from whence the blood escapes, but to the particular system of vessels from which it is poured out also.

On reflecting upon these circumstances, I was led to believe that some light might be thrown upon the question, by ascertaining experimentally the source of hemorrhage in an animal whose placenta, like that of the human female, was both decidual and fœtal. A pregnant bitch was accordingly obtained, which had nearly completed the full period of gestation: and it having been placed under the influence of chloroform, the uterus was exposed and opened, and the following observations were made.

1. It was observed, on separating the placenta, that blood flowed freely and continuously from the denuded uterine surface, increasing with the detachment, whilst none escaped from the detached portion of the placenta.

2. That the blood which escaped from the uterus was distinctly arterial, being of a bright arterial character.

3. On rupturing a placenta whilst still partially adherent to the uterus, it was found that a small quantity of dark venous blood escaped from the part torn; but only to a very trivial extent.

These observations were made with different placentæ, and uniformly with the same results.

Thus it would appear, in the canine species, that the source of hemorrhage in cases in which the placenta is partially detached, is exclusively the denuded uterine surface, so long as the placenta is entire: that the hemorrhage which takes place is of an arterial character; and that although a certain amount of blood may escape from the placenta, if lacerated or torn whilst still partially adherent, yet that this is very trivial in quantity, and of a dark venous character.

Considering, however, the different distribution of the veins in the maternal portion of the placenta in the human and canine species, I am aware that this experiment cannot be regarded as decisive of the source of hemorrhage under similar circumstances in the former. We know, for instance, that in the human placenta, the

utero-placental arteries open into large cells or dilated capillaries in the maternal portion of the organ, between which a free intercommunication exists; whereas in the bitch, the venous vessels of the maternal part of the placenta do not constitute a cellular or cavernous structure, but in form and distribution resemble ordinary veins. These circumstances were particularly pointed out by Dr. Sharpey, to whom I communicated the results of the experiment I have related; and in the course of a subsequent conversation he observed that, in his opinion, the best mode of ascertaining the source of hemorrhage in partial separations of the placenta in the human female, would be to obtain a uterus to which the placenta was still partially adherent, to inject the hypogastric arteries with defibrinated blood, and to observe whether it escaped from the uterus, the placenta, or from both.

In the early part of April, 1853, I had an opportunity of carrying out this suggestion. A poor woman under the care of Messrs. Clark, Norway, and myself, died of hemorrhage during the progress of a labour, rendered protracted by malposition and impaction of the fœtal head. A *post-mortem* examination of the body was made on the following day, and as it was found that the placenta was still partially adherent, although much of it had been detached, it appeared to me that it would serve the purpose in view. Accordingly the uterus and placenta were removed to University College, where the following observations were made under the immediate superintendence of Dr. Sharpey.

The uterus, which had been cut off somewhere above its orifice, was first carefully inverted, and several loose unadherent coagula were removed from its interior. It had the appearance of being very exsanguine; and on the surface from which the placenta had been detached, the ramifications of the utero-placental arteries could be plainly seen, but free from any plugging or coagula; about a fifth of the placenta was still adherent. In the next place, the vessels along the cut surface of the uterus were secured by ligatures placed along the line of its division, and the hypogastric and ovarian veins were also secured by ligature. An injecting pipe was now fixed in one of the hypogastric arteries, and some defibrinated blood was steadily injected. The results of the operation were as follows. The blood escaped freely from the orifices of the utero-placental arteries, which had been torn across by the separation of the placenta; none escaped from the torn utero-placental veins, nor did any pass away from the placenta. The injection was continued for some time, but with no variation in the results. It was now thought advisable to ascertain the force with which the blood was injected; and tested by the hæmadynamometer it was found not to exceed that of the heart, acting under ordinary circumstances. In the next place, the opposite hypogastric artery was injected; and in this case it was found, as in the other, that blood escaped freely from the orifices of the torn utero-placental arteries, but none passed out of the utero-placental veins; whilst in this case a small quantity escaped from the surface of the placenta, contiguous to that which was still adherent. The injection was repeated several times with the same results; the great bulk of the injected blood escaped readily from the orifices of the torn utero-placental arteries, a small quantity only came from the placenta, whilst none could be observed to pass out from the torn utero-placental veins, whose orifices were plainly visible and carefully watched. Nor, it should be added, were the vessels plugged with coagula.

Looking then to the results of this experiment, it would appear that the source of hemorrhage in partial but extensive separations of the placenta is principally uterine, and only slightly placental, and further, that it is arterial rather than venous. It would, however, be too much to assume that the experiments are conclusive as to the source of hemorrhage in all cases of placental separation. It must be remembered, that in this case the placenta was very greatly detached, and as, consequently, little blood only could have entered it, much could not be expected to have escaped from it; whilst, again, the tonicity of the arterial system could not have been great during life, as evidenced by the little resistance offered by the utero-placental arteries to the escape of the blood injected. Admitting, however, the full force of these and other considerations, it yet appears to me that the results of this experiment, coupled with those of the one previously related, and taken in connection with various clinical facts, afforded strong grounds for the belief that the *principal* source of hemorrhage in cases of partial separation of the placenta is uterine rather than placental, and arterial rather than venous.

What then, it may be asked, are the grounds upon which it is affirmed that these hemorrhages are respectively either venous or placental? The best reply to this question is probably that given by Dr. Simpson, in the passage I have quoted from his writings. "Uterine hemorrhage," he observes, "after separation of the placenta in any of the stages of labour, is *not arterial* in its character, because the utero-placental arteries are so long and slender as to become readily closed: 1. By the tonicity of their coats. 2. By contraction of the uterine fibres upon them. 3. Principally by the changes in their tissues, produced by the mechanical rupture of their coats." These probably constitute the entire grounds upon which the opinion in question is maintainable; and I will therefore proceed to consider respectively their nature and validity.

1. The assertion "*that uterine hemorrhage, after the separation of the placenta in any of the stages of labour, is not arterial in its character*," is one which, so far as I am aware, is not only unsupported by any evidence, but directly at variance with many trustworthy observations. On the 23rd of September, 1853, I had an opportunity of investigating this point, and of satisfying myself that the hemorrhage which took place from the uterus, between the birth of the child and the expulsion of the placenta, was distinctly of an arterial character. On the 10th of October, 1853, whilst in attendance upon a case of labour, my attention was directed to a rather profuse flow of blood which followed the birth of the child; and I observed, as it passed over the vulva, that whilst the greater part was of a bright arterial colour, a small portion was of a dark venous hue; the striking difference in the colour of the two portions left no doubt in my mind that they were respectively arterial and venous. The same thing was observed in the experiment I have related, in which the placenta was detached from the uterus of the bitch. The blood which flowed freely from the denuded uterine surface was of a bright florid colour, and such as to convince both Mr. Marshall and myself that it was arterial. I further find that the observations I have myself made, as to the character of the blood lost in uterine hemorrhages, are similar to those which have been made by other medical men; and therefore, in the absence of any evidence to the contrary, we may, I think, conclude that uterine hemorrhage after the separation of the placenta is rather of an *arterial* than a *venous* character.

2. The second point affirmed is "*that arterial hemorrhage from the uterus is prevented by the tonicity of the utero-placental arteries.*" It is far from my intention to assert that, in a state of health and tranquillity of the circulation, this is not the case; but, under other circumstances, it may be doubted whether the principle in question can be relied upon for the attainment of this object. The tonicity of the arteries, like every other vital property, is liable to be modified or affected by a variety of circumstances; and, regarded as a modification of the principle of contractility, may be supposed to be influenced by the same general causes; to be increased by those which tend to augment the strength and vigour of the body, diminished by those which tend to enervate or exhaust it, and disturbed by those which tend to disturb the nervous and vascular systems. Now, if we consider the circumstances under which uterine hemorrhages are most liable to occur, we shall find that they are respectively those which tend to enervate or exhaust the constitutional powers on the one hand, or morbidly excite or disturb the vascular system on the other. One of the most alarming cases of *post partum* hemorrhage which I have ever witnessed occurred in the wife of an eminent obstetric physician, whose nervous energies had been prostrated by the unexpected death of her mother about three weeks before the accession of labour. The poor woman, whose uterus was the subject of the experiment I have related, died of internal hemorrhage consequent upon partial separation of the placenta, when her strength had been exhausted by long parturient efforts; and numerous cases are related of fatal hemorrhage occurring in women who had been previously anæmic and weakly. On the other hand, every practitioner must have met with profuse uterine hemorrhage in connexion with morbid excitement of the heart and circulation; and hereafter it will be shown that, of the causes of such excitement, some have a sympathetic, and others a direct mode of operation. Further, I may appeal to the condition of the utero-placental arteries in the case of the patient who died of uterine hemorrhage, as showing that no plugging or particular contraction of them had taken place during life. Here indeed was a physical demonstration of the condition of these vessels, as they must have existed during life, after

fatal hemorrhage consequent upon partial separation of the placenta, the placenta having been separated during life; and if it can be clearly shown, as it was, that they had neither been so contracted or plugged during life as to prevent the escape of blood from them when injected with no more force than that of the heart's action after death, then it must follow, that neither could they have prevented the escape of blood from them during life, when injected under the ordinary force of the circulation. On these grounds, then, we may venture to doubt the correctness of the dogma, that the tonicity of the utero-placental arteries is, under all circumstances, capable of preventing the escape of blood from their orifices when torn across by the separation of the placenta.

3. In the next place, it is affirmed, "*that hemorrhage from the utero-placental arteries is prevented by contraction of the uterine fibres upon the course of these vessels, as they pass through and amid the uterine structure*"—a doctrine which is manifestly at variance with the well-known fact, that there is often no direct relation between the degree of uterine contraction and the degree or tendency to uterine hemorrhage. "The observing practitioner," says Dr. Gooch, "must have been frequently struck by the little proportion that existed between the want of contraction and the degree of hemorrhage; having found the uterus bulky without any hemorrhage, and a profuse hemorrhage without greater bulk of uterus. Nay, further, I have witnessed a profuse hemorrhage, though the uterus had contracted in the degree which commonly indicates security; and I have ventured to do what is seldom justifiable, separate the placenta before the uterus had contracted, without more hemorrhage than after a common labour." The correctness of these remarks, and their pertinency to the question under consideration, must, I think, be generally admitted; but besides these, two other series of facts may be adduced in opposition to the doctrine above propounded. First, that, in several instances, the placenta has been spontaneously or artificially separated from the uterus before the birth of the child, and, consequently, under circumstances in which contraction of the uterus could not take place, without any hemorrhage supervening; and, secondly, that, when it has been attached to the os and cervix uteri, its separation has been effected in many cases without any particular hemorrhage resulting, although it is affirmed by some anatomists, that there are few or no contracting fibres in the structure of the os and cervix uteri.

4. The last proposition affirmed—"*that hemorrhage from the utero-placental arteries is prevented by the changes in their tissues produced by the mechanical rupture of their coats, torn arteries being little or at all liable to bleed, and the placenta being separated by a true process of avulsion*,"—is completely invalidated by the results of the experiment performed upon the pregnant bitch, which I have described in the former part of this paper; for, on detaching the placenta from the uterus, and thereby lacerating or tearing through the utero-placental arteries, arterial hemorrhage was observed to follow. That is to say, having separated the placenta by a true process of *avulsion*, it was demonstrated that such proceeding was not productive of those changes in the torn coats of the utero-placental arteries which are assumed to follow such operation, and by which, it is alleged, arterial hemorrhage is prevented. And, to appreciate the full force and importance of this fact to the present inquiry, it is necessary to bear in mind that the placenta of the canine, as of the human species, possesses a maternal as well as a fœtal portion; that the utero-placental arteries in both pass from the uterus into the maternal portion of the organ, as do the utero-placental veins from the latter to the uterus: and that the chief difference in the anatomical structure of the two organs consists in the different distribution of the veins in their maternal portions. Accordingly, it must follow, that a separation of the placenta must equally give rise to a laceration of the utero-placental arteries in both species, and if it is clearly shown that hemorrhage from these arteries is not thereby prevented in the one, it must follow that it cannot thereby be prevented in the other.

I have thus critically examined the several grounds upon which it is alleged that hemorrhage does not occur from the torn utero-placental arteries in cases of partial separation of the placenta; and, having shown the insufficiency of the data upon which this doctrine has been assumed, I proceed to observe, that if blood does actually escape from these vessels, it must follow that proportionately little will escape from either the uterine veins or the placenta; because, according to the well known laws of hydraulics, fluids circulating in closed vessels will only continue in their re-

gular course when due pressure is maintained upon them. Now, under the circumstances stated, this condition is not fulfilled; and, accordingly, the greater part of the blood entering the utero-placental arteries will escape from their open orifices, rather than be continued onwards into either the uterine veins or placenta. In this respect, it must be borne in mind that the character of the utero-placental circulation must materially differ before and after separation of the placenta. In the former case, the pressure upon the circulating blood is equalised throughout; whereas in the latter, it is unequally distributed, and accordingly there will be a tendency to hemorrhage where this pressure is removed, or wherever openings exist in the utero-placental arteries.

The correctness of this view is further supported by a variety of circumstances, which go far to prove that the principal source of hemorrhage in these cases is neither the uterine veins nor the placenta. As opposed to its placental origin, I may mention: First, the character of the blood lost; which, as I have stated, is principally arterial, rather than venous. Secondly, the rapidity with which the blood escapes, and its fluidity in many cases of puerperal hemorrhage, would tend to show that it was rather poured out directly from the utero-placental arteries, than indirectly from the placenta. Thirdly, the peculiar cellular, cavernous, or reticulate structure of the maternal portion of the placenta, may be referred to as being calculated to prevent placental hemorrhage, by producing stagnation and coagulation of the blood in this part of the organ, when separated from its vascular connexion with the uterus. Fourthly, the occurrence of profuse hemorrhage after the entire separation of the placenta, both before and after the birth of the child, may be referred to as showing that it has no necessary dependence upon this organ. Fifthly, the small amount of blood which escaped from the placenta when the utero-placental arteries were injected in the experiment I have related, affords strong evidence against the placental origin of these hemorrhages. Whilst, sixthly, the escape of blood from the orifices of the torn utero-placental arteries, by lessening the quantity of blood which would otherwise enter the placenta, affords an additional argument against their placental origin.

As opposed to the venous origin of the hemorrhage, I may adduce the following facts: First, that the blood lost is for the most part not venous. Secondly, the absence of hemorrhage in many cases, in which those conditions exist which are most favourable to the occurrence of venous hemorrhage, namely, relaxed and distended states of the uterus. Thirdly, the absence of hemorrhage in many cases in which the placenta has been attached and separated from the os and cervix uteri; where the contractile mechanism of the uterus does not exist, by which it is alleged venous hemorrhage is prevented. Fourthly, the occurrence of profuse hemorrhage when the uterus is contracted, and when consequently the uterine veins must be firmly compressed. Fifthly, the escape of blood from the orifices of the torn utero-placental arteries; which would equally tend to prevent venous as well as placental hemorrhage. Sixthly, the fact that no blood was observed to flow from the uterine veins when the utero-placental arteries were injected in the experiment I have related. Seventhly, the normal course of the uterine circulation being from the uterine veins to the vena cava, it must follow that venous hemorrhage can only occur as the result of a retrograde, and consequently abnormal, movement of the blood.

Upon the whole, then, two things would appear to be certain; first, that no *necessary* relation exists between the degree of hemorrhage and the degree of separation of the placenta; or, secondly, between the degree of hemorrhage and the degree of contraction of the uterus; uterine hemorrhage having been variously moderate or excessive under similar degrees of separation of the placenta, and similarly moderate or excessive under the opposite conditions of relaxation and contraction of the uterus. Can it then be doubted that the absence of, or disposition to uterine hemorrhage must depend, in many cases, upon other causes than the anatomical connection of the placenta with the uterus on the one hand, or the contractile mechanism of the uterus on the other, or further, that these are to be sought for in the occurrence of arterial hemorrhage, and the various conditions of the utero-placental arteries, as modified by the general condition of the arterial system? Bearing in mind this view of the case, we can understand how it may happen that, the tonicity of the arterial system being great, uterine hemorrhage may be prevented when the uterus is most relaxed, and when consequently the conditions most favourable to venous

hemorrhage exist; that under the influence of morbid excitation of the heart and arteries, it may be profuse when the uterus is contracted, and when, consequently, venous hemorrhage would be most effectually prevented; and that its degree may vary in different cases with the same amount of separation of the placenta. Let me, however, be distinctly understood as speaking of *pathological*, rather than of *physiological* puerperal hemorrhage, and of its *principal*, rather than of its *exclusive* source; because on the one hand, it can scarcely be supposed, that the placenta can be separated from the uterus, under the most favourable circumstances in child-birth, without some hemorrhage resulting, which therefore cannot be regarded as pathological; nor on the other, can it be supposed that such hemorrhage should be derived exclusively from the torn utero-placental arteries. It has indeed been experimentally shown that some blood does actually escape from the detached portion of the placenta when the hypogastric arteries are injected, and the quantity so escaping will doubtless vary in different cases, and I have referred to an observation in which venous blood was discharged mixed with arterial, in a case in which hemorrhage preceded the expulsion of the placenta. It is therefore highly probable, that in all cases the source of hemorrhage is of a mixed character. But, looking to its source in those which are so considerable as to endanger the safety of the patient, it appears to me that the facts adduced are sufficient to justify the conclusion that it is principally arterial; and that, although blood may simultaneously escape from the utero-placental veins and placenta, the quantity lost by these channels considerably falls short of that which escapes from the torn utero-placental arteries.

In conclusion, we may, I think, deduce from a consideration of these facts some rules of practical importance in the treatment of puerperal hemorrhages, whether occurring in connection with partial or complete separation of the placenta. In particular we may learn the importance of treating them upon broader principles than those derived from a consideration of the condition of the uterus or the degree of separation of the placenta; and the necessity of investigating carefully the physiological and pathological states of the nervous and vascular systems, both before and during labour, with a view to the adoption of measures of a preventive as well as curative character. It is not my intention to enter at length upon this subject; but a brief reference to the principles upon which the prevention of puerperal hemorrhage should be attempted, will not be inconsistent with the object of this paper.

Apart from the anatomical condition of the uterus and placenta, it will be found in practice that hemorrhage during labour is liable to be excessive, in connection with two opposite states of the vascular system. In the one, there is morbid excitement of the heart and arteries, directly or sympathetically induced; in the other, there is a state of extreme depression of the circulation dependent either upon atony of the blood-vessels, or an impoverished condition of the blood. As both these conditions may exist and be recognised before the accession of labour, I will briefly advert to the curative indications they suggest.

Hemorrhage occurring during labour, in connection with inordinate excitement of the circulation, has been well illustrated by Dr. Gooch, as well as the treatment it requires, in his paper on a peculiar form of hemorrhage from the uterus. The patient before the accession of labour was flushed, and had a very full quick pulse. Abstinence from meat, wine, and warm drinks, a cool room, and a saline purgative, diminished but did not remove this state of the circulation, which continued in a considerable degree when the child was born. It was expelled very gradually, and after the removal of the placenta the uterus felt contracted in the ordinary degree. Nevertheless, about twenty minutes afterwards, there came on one of the most frightful hemorrhages which, Dr. Gooch observes, he had ever witnessed. Twelve months afterwards he attended the same patient in a subsequent labour, and was struck on observing the same state of circulation which had preceded the first. The labour proceeded naturally, but was again followed by profuse and alarming hemorrhage. Reflecting upon these facts, Dr. Gooch was led to believe that the hemorrhage depended not upon want of contraction of the uterus, but on want of tranquillity of the circulation; and he concluded if she again became pregnant, that a mode of treatment which would cause her to fall in labour with a cool skin, and quiet pulse, would be the best means of preventing a recurrence of the accident. In due time he had an opportunity of testing this practice; and although in the first

instance he was unsuccessful, yet in another, by means of an abstemious diet, saline aperients, and the moderate abstraction of blood from the arm before delivery, the labour was completed without the smallest degree of flooding or faintness. The principle upon which this variety of uterine hemorrhage should be treated, is sufficiently indicated in these details.

In a second series of cases, it has appeared to me that hemorrhage during labour has been immediately dependent upon a disordered state of the circulation, excited by functional derangement of the liver and digestive organs. Such patients suffer for some time before labour, from constipation, flatulence, and other symptoms of indigestion; and if the stools are examined, they are found to be of a pale, or clay colour.

Profuse hemorrhage under these circumstances may either immediately follow the birth of the child, or may continue to recur for some time after labour. In two instances recently attended by me, profuse hemorrhage followed delivery; and in both the state of the hepatic functions was such as I have described. The recurrence of hemorrhage led to an examination of the stools; in each case they were found to be clay-coloured, and almost destitute of bile; and on restoring the action of the liver, the disposition to hemorrhage was in each case removed. From these facts I have been led to believe that many instances of puerperal hemorrhage might be prevented by inquiring into the condition of the liver and digestive organs before labour, and adopting such means as would rectify any derangement which might exist.

The second class of cases I have referred to, are those in which puerperal hemorrhages occur in connexion with an enfeebled state of the circulation; and this, inasmuch as it may have existed long antecedently to labour, is eminently amenable to preventive measures of treatment. It is met with in females whose physical health has been deteriorated or depressed by bodily disease, laborious or unhealthy occupations, or mental anxiety, and comprehends a very numerous category. In these, either from atony of the blood-vessels, or an extreme fluidity of the blood, but little or no barrier is opposed to the escape of this fluid; and if preventive treatment has not been adopted, but little good will sometimes result from any other. In all such cases the treatment should be of a prospective character, and directed to the improvement of the health before labour by the employment of such measures, hygienic and medicinal, as will amend the condition of the blood and augment the tone and vigour of the arterial system. In proportion as anemia preponderates, iron will be indicated; where atony of the nervous and vascular systems is the more prominent condition, strychnia should be preferred; whilst in cases in which both these pathological elements coexist, a combination of both remedies will answer best.

As regards curative treatment, I would wish more especially to direct attention to the advantages likely to be derived from the employment of galvanism in these cases; not indeed locally applied to the uterus, but employed in a more general and diffusive manner, with the view of imparting increased tone to the arterial system at large. This, I believe, may be accomplished by passing somewhat powerful single currents from the upper portion of the spinal cord through the uterus. The opportunities I have had of observing the actions of galvanism in obstetric practice, induce me to think favourably of it in these cases, and some investigations commenced with the view of determining its power in arresting arterial hemorrhage support this opinion: whilst it must not be forgotten, that several cases have been published in which uterine hemorrhage has been thus speedily arrested. I will only add, that if my view of the source of hemorrhage in cases of partial separation of the placenta is confirmed, it will prove a most valuable auxiliary in the treatment of placenta previa; simultaneously tending to the arrest of hemorrhage, and the dilatation of the uterus.—*Association Medical Journal, Dec.* 23, 1853, *p.* 1127.

160.—*Treatment of Hemorrhage from the Navel of New-born Children.*—Ordinary remedies are insufficient to arrest the bleeding. Kolophonian, alum, the various styptic fluids, turpentine, ice, amadou, compression, &c., have been employed in vain. Cauterization has been several times tried, both with the nitrate of silver and the actual cautery. In fact the use of the ligature appears to be the only means worth

dependence upon as capable of restraining the bleeding, and the mode of its application *en masse*, as advised by Dubois, is to be preferred. But in the best manuals and treatises we find no advice given as to the method of securing immediately the umbilical arteries, and, so far as we know, it has never been accomplished, from the many difficulties attendant upon its performance. It has therefore been proposed to secure all the three vessels together, by pulling the navel-knot forward, and passing around it a ligature with the help of hare-lip pins. At first sight this operation seems to have much in its favour, though experience does not confirm it. Nevertheless up to the present time it has been of most service.—ROGER, in *Journ. f. Kinderk.* *Lancet*, *Feb.* 11, 1854, *p.* 160.

A SYNOPSIS,

CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE PRECEDING PAGES: SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR. (ARRANGED ALPHABETICALLY.)

AFFECTIONS OF THE SYSTEM GENERALLY.

AGUE.—In cases of the quotidian type, small doses of strychnia, one twenty-fifth to one-fiftieth of a grain, have proved very valuable in several cases of the poorer labourers at the Crystal Palace, who were much exposed at night. (Dr. F. E. Wilkinson, p. 54.)

DROPSY.—Give eight grains of calomel and eight grains of jalap with one of emetic tartar, in the morning; and if necessary give a little wine and water during its operation. Follow this by three grains of powdered squill with two of digitalis, every night for six successive nights. At the same time give a mixture with bitter infusion, and small doses of tincture of squills and spirit of nitre, twice a day. Then omit the digitalis and continue the other medicines for six nights more. Occasionally the drastic purge will have to be renewed. (Mr. J. Toogood, p. 47.)

FEVER.—Fever in one sense is incurable, but, by proper management, it cures itself. "We cure the patient by preventing him from dying" during a certain period, and then the disease dies out; we keep him up by food, stimulants, and tonics. One of the most important doctrines of the day, is, that fever may produce local symptoms very like inflammation, but not really so; and if these local affections be treated on the antiphlogistic plan in cases of fever, it is probable that the results will be fatal. Therefore, in fever, although the patient be attacked *apparently* by inflammation of the brain, causing delirium, &c. don't deplete, but steadily support the patient by food and small and repeated doses of brandy or wine, say a teaspoonful or tablespoonful every hour or two. The same principle must be remembered in affections of the lungs, heart, and digestive organs. All or some one of them may be attacked by apparent inflammation, but don't deplete if you see typhus present. On the other hand, boldly give food and stimulants, till you see the brown tongue assuming a healthier aspect, notwithstanding the apparent inflammatory symptoms, as it is the rarest thing possible for real inflammation to co-exist with fever. (Dr. W. Stokes, p. 17–24.)

Where the secreting surface is not easily disorganized, we may try, by stimulating it, to aid in the elimination of the poison. This we may fulfil by emetics. Ipecacuan is the emetic to be preferred in ʒj. doses of the wine. It should be given during the early stages, while nausea already exists as a symptom. Fever terminates commonly in four ways; 1st. The patient may be struck down at once and die by the shock; 2nd. He may die from the first to the second week; in this case there is great febrile action, and the patient dies by phrenitis, or this perhaps conjoined to some other complication. 3rd. The cerebral symptoms may appear more gradually, as at the end of the second week, commencing with delirium, and if fatal, ending with coma. In the 4th class, he may die at the end of the third, fourth, or fifth week, the asthenia increasing, and accompanied, perhaps, by specific intestinal lesion. In the third class, where violent delirium is present, we must give opium and apply cold affusion to the shaven head. The opium may be guarded with ipecacuan. If coma comes on, large blisters must be applied. The strength must be sustained on the plan of Dr. Todd, by giving small quantities of brandy and water and beef-tea at frequent and short intervals, and it must be especially observed that severe febrile symptoms do not contra-indicate this method. In the fourth class we must relieve the pain and tympanitis in the bowels and peritoneal cavity by turpentine stupes. A turpentine enema may be also given in the following form: Spirit of turpentine

thirty minims; tincture of catechu, two drachms; tincture of opium, fifteen minims, to be added to ℥ ij. of decoction of starch. (Dr. W. Brinton, p. 26–32.)

Tropical Fever and Dysentery.—When the remissions are imperfect, and there is acute congestion of some important abdominal or other organ, give quinine (in ℈j. doses) from 3j. to 3ij. daily. The more acute the symptoms and the less the remissions, the larger and earlier should be the doses. These doses should be continued until complete cinchonism is produced, namely, singing in the ears and deafness. In robust cases, before the accession of the fever, one blood-letting often gives great temporary relief. (Mr. E. Hare, p. 32–36.)

Gout, *Acute.*—Apply pure spirits of wine to the part by means of a piece of lint, and cover it with oil-silk. (Dr. Goolden, p. 45.)

Chronic Gout and Rheumatism.—Mix 3j. of carbonate of soda with a bread poultice and apply this hot every night. (Dr. J. R. Bennett, p. 45.)

Purpura Hemorrhágica.—Give turpentine in the following manner: Sp. terebinth. 3ij; sacchari albi, pulv. acaciæ. āā 3ij; tinct. lavand. comp. 3j; aquæ menth. pip ad ℥ viij. M. fiat mistura. ℥ j ter die. (Dr. G. Willis, p. 49.)

Rheumatism.—Almost all the salts which act on the kidney are useful. Lemon-juice seems to be useful chiefly by acting on the kidneys and from the supercitrate of soda or potass which it contains; for the same reason we may give citrate of ammonia, acetate of ammonia, and nitrate of potass. Dr. Golding Bird prefers acetate of potass. He gives half an ounce, largely diluted, in divided doses every twenty-four hours. (Dr. G. Bird, p. 43.)

Dissolve 3ij of nitrate of potash in a pint of water, let the whole be taken during the twenty-four hours. By this dose gastric and renal irritation is avoided, and the patient does not get disgusted with the drug as he is apt to do when the quantity taken is two or three ounces in the same period. (Dr. Rowland, p. 41.)

Chronic Periosteal.—Dr. Basham has observed that in cases of chronic periosteal rheumatism, where the patient has been benefited by iodide of potassium, at some antecedent period he has been salivated by mercury; whereas if no salivation has previously occurred, he has found the iodide of potassium of little or no effect. This disease may depend upon the impregnation of the system by mercury, or from the syphilitic virus. If the former, iodide of potassium is the remedy; if the latter, alterative doses of some mild preparation of mercury. (Dr. R. W. Basham, p. 45.)

Scarlatina.—When coma exists after or during an attack of scarlatina, the electro-galvanic battery has been found successful, the same as in cases of poisoning by opium. At the same time a flexible tube may be passed into the stomach, and port wine and ether introduced. (Dr. P. J. Murphy, *Lancet*, April 1, 1854, *p.* 360.)

AFFECTIONS OF THE NERVOUS SYSTEM.

Cerebritis.—When fever is present, of a typhus character, don't be afraid of the symptoms of inflammation in the exhibition of wine. When typhus is present there may seem to be local inflammation either in the brain, heart, or other organs, but this is not real inflammation, and will really be aggravated by depletion. (Dr. W. Stokes, *Edin. Med. and Surg. Journ.*, April 1, 1854, p. 364.)

Chorea, *Hysterical.*—Give 3ss. doses of the syrup of the iodide of zinc, and calomel night and morning. (Dr. Barlow, p. 61.)

Epilepsy.—Let the patient live by rule, and take a proper degree of exercise. Act daily on the bowels twice by the following pills, mercurial pill one scruple, compound colocynth pill two scruples, make into twelve pills, and take one occasionally. Also take of the juice of the cotyledon umbilicus (Davenport's) one teaspoonful daily before breakfast. Avoid stimulants, suppers, balls, theatres, &c. Increase the juice by and by to two teaspoonfuls. (Dr. Joseph Williams, p. 53.)

Dr. F. E. Wilkinson corroborates Dr. Marshall Hall's statement of the value of strychnia, dissolved in acetic acid, in the treatment of epilepsy. (p. 54.)

Headache.—Simple congestive headache and other painful affections of the head may be relieved by what is called "traction," or dry cupping. The spine, and if necessary, the whole back is smeared with spermaceti ointment. The cupping glass

is then exhausted and fixed on any given spot; it moves with facility over the anointed surface, acting powerfully as it goes along. This is very useful in hysterical headache. (Dr. P. J. Murphy, *Lancet, April* 1, 1854, p. 360.)

Neuralgic and Hysterical.—Generally depends on subacute ovaritis, and attacks the *left* side of the scalp, shooting from the neck to forehead and not vice versa, as in odontalgia. Use the following remedies according to circumstances: open the bowels well and regularly; use the cold hip-bath or sea bathing; a sinapism or blister to the back of the neck; belladonna plaster with a little opium in it. Tonics, as quinine in an infusion of valerian; valerianate of zinc half a grain three times a day with one drop of creosote; sulphate of iron combined with valerian and ammonia, or the ammoniated tincture of valerian; morphine in doses of one-sixth or one quarter of a grain to relieve the pain, if other remedies fail. (Dr. P. J. Murphy, *Lancet, May* 20, 1854, 540.)

Neuralgia.—Where the simple carbonate of iron fails to give relief, give the saccharine carbonate of iron and manganese. (Dr. S. P. Speer, *Med. Times and Gazette, Dec.* 10, 1853, p. 599.)

Dissolve two grains of strychnia in ℥j. of phosphoric acid (P. L.), and give five minims three or four times daily, either alone or combined with some other remedy adapted to the nature of the case. (Dr. F. E. Wilkinson, p. 54.)

Sciatica.—In cases where sciatica depends on local irritation of the nerve within the pelvis from accumulation of fæces in the colon or cæcum, the following pills generally produce a good effect; the patient, however, should be warned of the activity of the remedy. Croton oil, one minim; blue pill, extract of hyosciamus, each four grains; compound extract of colocynth, eight grains; to be divided into four pills, two to be taken at night, and repeated as the case may be. (Mr. H. Hancock, p. 71.)

Solar Plexus, *Exhaustion of Nervous Power of the.*—Give the following, varying it according to the requirements of individual cases: Chloroform and tincture of ginger, of each half an ounce; aromatic spirit of ammonia, two drachms; mix. Twenty-five drops to be taken thrice daily in a wineglassful of milk. (Prof. Osborne, p. 71.)

Sensation, *Loss of, from Hysteria.*—A case of this kind in a young woman, aged 25, which various remedies failed to relieve, was gradually cured by the patient persevering in taking the following, in the form of a draught, three times a day. Tinct. ferri sesq., ♏xv.; tinct. cantharid. ♏iv.; and tincture of aloes, ♏xx. (Dr. Rowland, p. 68.)

Tetanus.—Belladonna may be given in large doses. Give one grain every two hours, and increase this dose to one and a half grains, using also occasionally a suppository with three grains in it. Watch the pupil; if it dilate, gradually desist from the belladonna. (Mr. Booth Eddison, *Med. Times and Gazette, April* 15, 1854, *p.* 378.)

AFFECTIONS OF THE CIRCULATORY ORGANS.

Nævus.—Use a pretty little syringe (figured at page 206) made of glass, with an accurately adapted piston, and ending in a narrow platinum tube, with a trocar point; first introduce a narrow-bladed tenotomy knife into the nævus subcutaneously, break its structure up well and then introduce the point of the syringe charged with the perchloride of iron, and force out a few drops; then withdraw the instrument, and during its withdrawal, in order to prevent bleeding, a little more of the solution is to be injected so as to plug the orifice by the coagulum formed. If the tumour be large, repeat this operation in two or three places. (Mr. C. Forster, p. 206.)

Apply on a piece of thin leather, cut accurately to the size of the tumour, a compound of fifteen grains of tartar emetic to ℥j. of galbanum plaster. Inflammatory action is set up and the vessels obliterated. (Dr. Cumming, p. 208.)

Pericarditis.—Whenever the fever present is of a typhus character wine is required. (Dr. W. Stokes, p. 21.)

Varicose Veins.—In a case of large varicosity of the saphena vein, injection of the perchloride of iron produced coagulation and effected a cure. (M. Folfin, p. 208.)

AFFECTIONS OF THE RESPIRATORY ORGANS.

ASPHYXIA *of infants*.—Galvanism is most useful in exciting respiration in this condition. (Dr. Barnes, p. 266.)

ASTHMA.—Twenty drops of chloroform inhaled in the handkerchief and repeated carefully, taking care not to produce stupefaction, produced marked relief in a case of severe asthma. (Dr. R. Reynolds, p. 63.)

Ten minims of tincture of lobelia, with sedatives, expectorants, or stomachics, is very useful in chronic bronchitis, with tendency to paroxysmal asthma. If the nausea be very excessive, combination with a few drops of hydrocyanic acid is often useful. (p. 93.)

Nervous.—Brown paper soaked in a solution of nitrate of potash and burnt in the room of an asthmatic patient will give instant relief. The following pharmaceutical paper is still better: Pasteboard broken down in hot water, four ounces; nitrate of potash, two ounces; belladonna, stramonium, digitalis, lobelia inflata, all in powder, each twenty grains; myrrh and olibanum, of each two and a half drachms. Incorporate all these with the paste, divide the mass into sheets of the thickness of three lines; dry, and divide in little square pieces. Burn them in little saucers in a well shut-up room. (M. Carrie, p. 93.)

HEMOPTYSIS.—In hemorrhage from the lungs preceding tubercular deposit, we should not always be in haste to check it, as it may relieve congestion. We should determine the blood rather to other organs, than give direct astringents. Alum dissolved in the mouth is one of the best astringents. Take up powdered gum arabic and of white sugar, each three drachms, powdered tragacanth one and a half drachms, alum two drachms, catechu three drachms, rose water sufficient to form sixty lozenges. Acetate of lead is preferable to gallic acid, and turpentine is one of the most certain styptics in such cases. (Dr. T. Thompson, p. 92.)

HOOPING-COUGH.—As hooping-cough seems to be the elimination of some poison in the blood, we must endeavour to find an antidote to it. As we know of no antidote, we are obliged to let the patient cough the disease away, guarding him against the bad consequences, and protecting him from the complications. The disease is not an inflammatory condition of any part, therefore any antiphlogistic treatment does harm by weakening the patient and impoverishing the blood. The first thing is to guard against bronchitis and pneumonia, by affording a well-regulated temperature. Then we must uphold the strength by keeping the patient well nourished. The chest may be also sponged with water once or twice a day; of remedies, the sedative, anti-spasmodic class is the best for allaying the irritability of the parts, as the preparations of opium, henbane, conium, belladonna, and hydrocyanic acid. Depressing drugs should be avoided, as tartar emetic and ipecacuan. The careful inhalation of chloroform deserves a trial, but only in small quantities. Splashing the chest with cold water is also valuable, taking care not to wet the head, and that the temperature of the room be warm when it is done. (Dr. R. B. Todd, p. 82.)

Let a few drops of chloroform be inhaled on a handkerchief, when the attack is felt coming on. (Dr. F. Churchill, p. 84.)

PHTHISIS, *Diarrhœa of*.—Give five grains of trisnitrate of bismuth combined with three grains of gum arabic, and two of magnesia, every four or six hours. (Dr. T. Thompson, p. 92.)

Night perspirations of.—Give four grains of oxide of zinc, and four grains of extract of hyosciamus, made into two pills, every night for a time. (Dr. T. Thompson, p. 92.)

AFFECTIONS OF THE DIGESTIVE ORGANS.

CHOLERA.—Immediately wrap the patient in a sheet wrung out of boiling water with a dry blanket over the sheet. The purging is to be checked by appropriate means; if it continue, with vomiting and thirst, large quantities of cold water are

not to be allowed; but small quantities of iced water, or portions of ice. Afterwards, he may have a teaspoonful of brandy and half a wine-glassful of soda-water every five or ten minutes; or ten minims of laudanum in soda-water, with or without brandy, as it may suit the stomach. A solution of the nitro-muriatic acid is useful sometimes, given with a little syrup of poppies. (Mr. Barwell, *Monthly Journal, Jan.* 1854, p. 50.)

Mix from ℥ ss. to ℥j. of the undiluted nitrous acid, according to the severity of the symptoms, in from ℥ iv. to ℥ vj. of some aromatic waters. If there be restlessness and pain, add forty minims of laudanum. A quarter of this mixture to be given every two, three, or four hours according to the urgency of the vomiting and purging. It may be given in a cup of thin gruel, nearly cold. If rejected, it may be repeated in ten minutes. No food should be taken for half an hour afterwards. (Mr. R. H. Whiteman, *Assoc. Med. Journal, Dec.* 2, 1853, p. 1063.)

1. The "rice water" vomit and purging require to be energetically subdued by quinine, sulphuric and other acids, creosote, nitrate of silver, and such like remedies. 2. In actual and threatened collapse, external warmth, stimulant embrocations, and those internal stimulants which act on the capillaries, are of signal benefit. 3. In reaction, and during convalescence, local inflammations and congestions require to be guarded against or subdued; and rational means must be adopted to restore the secretions of the liver, kidneys, and skin, but particularly of the two former. 4. Lastly, though not of less importance, the character of the fever should be modified, and a repetition of the paroxysm guarded against, by change of air, or by the administration of quinine, which, in the majority of cases, from the existence of anemia, ought to be conjoined with iron. (Dr. Cormack, *Assoc. Medical Journal, Nov.* 11, 1853, *p.* 993.)

Dyspepsia, *from Defective Action of Excreting Organs.*—Enjoin a light and simple diet, with water for drink, fresh air and exercise, and medicines that increase the secretions of the liver, kidney, and bowels. Blue bill and black draught do well enough for strong people. In other cases, 15 grains of sesquicarbonate of soda, and as much potassio-tartrate of soda as will act gently on the bowels, may be given. To relieve the acidity, fifteen grains of the bicarbonate of soda or the bicarbonate of potash may be given two or three times a day, two or three hours after the principal meals. At the same time keeping up a free action of the bowels by blue pill, or colocynth with henbane. If total abstinence is not feasible, the best drink is pale sherry or brandy largely diluted with water. If we have oxalic acid deposit and freedom from red deposit, the best remedy is the nitro-muriatic acid, eight to twenty minims of each twice a day in a glass of water half an hour before breakfast and half an hour before dinner. If there be a red deposit, however, from lithic acid or lithate of ammonia, give, instead of the mineral acid, the carbonate or the aromatic spirit of ammonia. Sugar in this kind of cases should as much as possible be avoided. (Dr. G. Budd, p. 98.)

Slow and Imperfect Digestion.—We must first give remedies which increase the flow of gastric juice. The diet and habits must be regulated. The stomach must not be oppressed by new bread, tough meat, or malt liquors; and bodily fatigue, and nervous exhaustion must be avoided. Half to two grains of ipecacuan; three or four grains of rhubarb, or these with a grain of capsicum in a pill, may be given before dinner. Salt and mustard are also stimulants. Ipecacuan would seem to be the most powerful of any of these. A glass of water and a lump of sugar after a meal will sometimes relieve the uneasiness. The muriatic and nitro-muriatic acid taken half an hour before meals are also useful. Alkalies must not be given, as they weaken the gastric juice. If the food undergoes fermentative changes, and sulphuretted hydrogen is given off, producing belchings like rotten eggs, half a minim of creosote may be given in a pill at the time of meals. If the fermentative change be accompanied by distension and eructation of inodorous gas (carbonic acid), nitro-muriatic acid and the stimulant dinner pills just named will be useful. If the fermentative change produce lactic acid, then we have every thing taken turning to an acid; in this case we must give alkalies, and before meals bismuth and magnesia, and brace the walls of the stomach with the mineral acids, especially the sulphuric. (Dr. G. Budd, p. 94.)

When the food lies heavy on the stomach, as in people at the turn of life who lead sedentary lives, give small doses of ipecacuanha, from a quarter of a grain to

two grains, in the morning fasting, so as to cause a slight feeling of vermiculating motion of the stomach, but not to cause nausea, and gradually increase the dose if necessary; one grain may be mixed with two grains of rhubarb, and given just before meals. Small doses of rhubarb, ginger, and pepper; one grain of rhubarb with one grain of cayenne pepper in the form of a pill, also give relief in these cases.

Painful Digestion.—Bismuth is one of the best medicines when pain or cramp accompanies digestion, and where there is no ulceration. It restrains undue secretion, and thus differs from ipecacuanha, which promotes it. It is best given a short time *before* meals, ex. g., ten grains three times a day. Another good medicine in such cases is hydrocyanic acid, which is chiefly useful to relieve pain of the stomach when it is empty of food; combine it with soda. (Dr. G. Budd, p. 105.)

Accompanied with Oxalate of Lime in the Urine.—A solid animal diet with little bread and vegetables, no fruit, very little sugar, or vegetable acid. Give the mineral acids. These do for oxalate of lime what the alkalies do for uric acid deposits. Give each acid separately. Give dilute sulphuric acid when an astringent is wanted, as in colliquative perspiration, menorrhagia, hemoptysis, and diarrhœa: hydrochloric acid when digestion requires assisting. The stomach liberates this acid for the purpose of digestion. Give both this and the dilute sulphuric acid before the meals. Give dilute nitric acid when the secretion requires to be increased; it is the opposite of sulphuric acid in its action. Sulphuric acid, therefore, astringes; hydrochloric promotes digestion; nitric promotes secretion. To prevent these acids acting on the teeth, wash the mouth out with a teaspoonful of aromatic spirit of ammonia in a little water immediately after taking them. They should all be taken on an empty stomach. (Dr. Bence Jones, *Medical Times, May* 6, 1854, *p.* 454.)

Prolonged Dyspepsia.—Dissolve two grains of strychnia in ℥j. of phosphoric acid (P. L.); five minims of this solution may be given three or four times daily in cases of prolonged dyspepsia, and where the nervous system requires tone. (Dr. F. E. Wilkinson, p. 54.)

Dysentery, *Tropical.*—(See "Tropical Fever.")

Hemorrhoids.—In using nitric acid, the strongest possible should be procured, not that which is usually kept by chemists. The best way of applying the acid is by using some instrument which will encircle the base of the tumours, hold them in their situation, and sufficiently press upon them so as to prevent hemorrhage. If necessary, any portions of the tumours may be removed, the parts wiped dry, and the acid at once applied to the surface. There are two classes of these tumours, one which is soft and vascular and very liable to bleed, and another which is firmer and which does not bleed. For the first the best treatment is the nitric acid application, but for the second the nitric acid is not sufficiently strong. For these Mr. Lee has invented a pair of broad forceps (see diagram, page 219) by which he grasps the tumour, and a portion of it near the operator is removed with the curved knife. The cut surface is then touched with the acid or with the actual cautery, and the parts returned into their natural position. If the portion cannot be protruded, then Mr. Lee has operated in another way. A rectum speculum is introduced having a slide; the opening is applied against the tumour, and when the tumour has bulged in to the speculum, the slide is placed in the groove and the tumour firmly held between it and the rest of the instrument. A long narrow knife is introduced within the speculum, a portion of the tumour cut off and the nitric acid or the actual cautery applied. (Mr. H. Lee, p. 217.)

Mr. Steel relates a case of this disease, which he treated successfully by the galvanic cautery. (p. 220).

Hernia, *Inguinal.*—The evidences of a hernia having been reduced *en masse*, are: 1st. The signs of strangulation continuing after the apparent reduction; 2nd. The loss of the hernial sac; 3rd. A feeling of fulness at the internal ring, and of an ill-defined firm swelling in the abdomen behind or below the ring; 4th. A disproportionate amount of pain in this part to that which exists in the other part of the abdomen; 5th. The usual drawing up of the testicle. (Mr. J. Paget, p. 210.)

Push part of the skin of the scrotum up the inguinal canal with the finger, withdraw the finger and introduce in its stead an instrument used by M. Wutzer (consisting of a wooden cylinder, a needle passing through it, an outer wooden case, and a screw to bind the case and cylinder together). Pass the needle up and pierce through both sac and integument so as to stitch, as it were, the sac and invaginated

scrotal skin to the abdominal skin. The instrument is kept in for several days, and a certain degree of inflammation is thus excited which blocks up the canal. (Mr. Spencer Wells, *Lancet*, *May* 20, 1854, *p.* 542.)

Pyrosis.—Give a combination of astringent and sedative remedies, as five grains of bismuth with 1–12th of a grain of the muriate of morphia, or five grains of the compound kino powder, or an efficient dose of catechu, krameria, or logwood, with opium, two or three times a day. Astringents are useful sometimes, as half a grain of argent. nit. three times a day; or three to five grains of nux vomica three times a day; or quinine, or the mineral acids. If there be anemia present, steel should be given. (Dr. G. Budd, p. 107.)

Rupture Truss.—For a description and diagram of Dr. Arnott's new rupture truss with screw adjustments, see p. 215.

Sarcinæ Ventriculæ.—This disease is easily recognised by the vomited matter fermenting, both the foam on its surface and the sediment thrown down containing abundance of sarcinæ and torulæ. The fermentative process may be checked by giving half a minim of creosote in a pill at each meal. Common salt has the same effect. Bisulphite of soda from the liberation of sulphurous acid, has the same power. It may be given in doses of ℥ss. to ℥j. in water, two or three times a day. To regulate the bowels give aloetic or colocynth pills. (Dr. G. Budd, p. 108.)

Tænia.—Give tannic acid. This we might infer from analogy would be beneficial from its action on gelatine and albumen, both of which these parasites contain. (Prof. Osborne, p. 119.)

The seeds of the pumpkin contain a fixed oil; half an ounce of this given twice a day, followed by an ounce of castor oil, has proved very effectual. (Prof. Paterson, p. 120.)

AFFECTIONS OF THE URINARY ORGANS.

Diabetes.—It may be observed that porter increases the sugar in diabetic urine; but claret and spirits, as brandy, whiskey, and rum, do not; and what is more important still, milk scarcely increases it at all, even when the diet consists mainly of it, as the milk sugar is not easily converted into glucose within the body. As diabetic patients sometimes go off phthisical, cod-liver oil is a valuable remedy, and large quantities of it may be taken in this disease. (Dr. Bence Jones, p. 131.)

Give lime-water and hartshorn. This was a prescription of Dr. Colles, of Dublin, and, though unable to explain the reason of its value, it proved nevertheless in many cases successful. (Sir H. Marsh, Bt., p. 136.)

The following was the treatment in a successful case of this disease. The diluted mineral and hydrocyanic acids were taken for some months. The diet was limited to butcher's-meat, fish, eggs, milk, and bran-bread. Fresh vegetables, such as cabbages, were taken occasionally. Brandy and water was allowed as a drink. A dose of rennet was taken after each meal. (Dr. H. Fearnside, p. 137.)

The following treatment has proved very useful. A meat diet; a warm bath each alternate day, three grains of Dover's powder three times a day, and five grains of the same with five of antimonial powder at bed-time; with saline draughts of the phosphate of soda and tartrate of potash to regulate the bowels. (Dr. W. R. Basham, p. 134.)

Kidneys, *Passive Hemorrhage from.*—Give gallic acid in the following form. Gallic acid ℥j.; dilute hydrochloric acid ℥ij.; solution of hydrochlorate of morphia (E. P.) ℥j.; distilled water, ℥ vss. A tablespoonful to be taken every fourth hour. (Dr. E. G. Crooke, p. 149.)

Oxaluria.—In a case of this disease marked by the presence of dumb-bell crystals, after other remedies had failed, one grain of nitrate of silver was given every six hours. In two days it was diminished to half a grain, and ℥j of the acidulated tincture of calumba was given night and morning. It should be observed, that where oxalate of lime appears in octohedral crystals, the nitromuriatic acid with a vegetable tonic will generally effect a cure. If the dumb-bell form appears, nitrate of silver is very useful. Where both kinds of crystals are present, these medicines should be given alternately. (Dr. J. Gray, p. 142.)

SPERMATORRHŒA.—Where physical weakness is a prominent symptom, quinine has an undoubted efficacy in controlling the *night* discharges of spermatorrhœa. Spirit of camphor is the best remedy for relieving the obstinate erections which sometimes remain after gonorrhœa, a teaspoonful for a dose. Gymnastic exercise is an excellent means of controlling spermatorrhœa. The best plan is to rise at six in the morning, sponge with cold salt water, use the dumb-bells for half an hour, and follow this up with a brisk walk. For both the night and day discharges, opium is a most valuable remedy. If the costiveness is obstinate, let the patient take a pill of gentian with 1–12th of a grain of strychnia, with a tumbler of unsweetened gin and water at night, and one of cold water in the morning. If the urine scalds, and the patient complains of spasmodic pain at the neck of the bladder, and the urine be loaded with lithates, or clouded with mucus, we may give the nitro-muriatic acid with laudanum, in the decoction of pareira brava or chimaphila. In cases of extreme uneasy sensation or creeping along the vas deferens or urethra, veratria ointment, or some mild counter-irritant, are the most useful applications. The caustic holder is not to be regarded as *the remedy*, because, in truth, it is not often called for. In cases complicated with gleet, where the cautery has failed, blistering is the best remedy. A good instrument for applying the caustic is a platinum canula with stilette. After introduction, the stilette is withdrawn, and a bougie passed down prepared thus: the tip being scraped rough, it is rolled in fused caustic, and this again in melted tallow, by which means a thin film of caustic is secured. (Mr. J. L. Milton, p. 338.)

The indigestion in this disease is best relieved by aromatic confection, with sulphite of soda and mint water. Before resorting to the caustic bougie, the sensitiveness of the urethra must be diminished by occasional blisters and injections. In prostatic gleet, a blister repeated two or three times has cured the patient after all other treatment had failed. The same in night discharges. Quinine may be given subsequently. (Mr. J. L. Milton, p. 236.)

STRICTURE OF THE URETHRA.—If we wish to know whether the bougie is pressing against the walls of the urethra, or has entered the stricture, we must draw it gently back; if the latter, we shall meet with some degree of resistance as if it had been grasped by some contracted orifice. If the stricture be long and callous, the bougie may cease to advance, and in this case it should be withdrawn and a larger one introduced. Catgut bougies are going out of use; the common plaster ones are not very convenient, but they must be employed where the contracted parts are tortuous and of small calibre. Mr. Liston, however, rejected them altogether, and if the stricture was moderate, used a plated metal bougie, and if very tight, a small silver catheter. Mr. Lawrence is another high authority in favour of metallic sounds. Having been passed, the instrument should remain in the urethra a short time, and then be withdrawn, introducing it again on the third day, and if it is well borne, introducing it daily, and allowing it to remain a longer time, so as gradually to dilate the strictured part. This is a good but a tedious plan, and some surgeons prefer introducing a small instrument first, and then immediately passing in rapid succession two or three of a larger size, until the patient complains of weariness or pain. Permanent dilatation is effected by passing an instrument and allowing it to remain forty-eight hours or longer, according to the case, then this is withdrawn and a gum-elastic catheter substituted. This may be left for from two to six days; it is then withdrawn and a larger instrument passed, and so on until the dilatation is complete. For this purpose Mr. Wakley's instruments are very useful, consisting of silver and flexible tubes of graduated sizes. (Mr. W. Coulson, p. 226.)

SYPHILIS, *Congenital.*—The mildest preparations of mercury given to children are apt to run off by the bowels; to obviate this let a piece of flannel smeared with mercurial ointment be worn constantly over the child's belly. If the child be at the breast, mercury should be administered to the mother also. (Mr. Wormald, p. 241.)

URINE.—When alkalescent from *fixed alkali* it is from the stomach. Take more air and exercise, with mild nutritious food. Give vegetable acids, as lemon-juice or citric acid, but not tartaric. Seventeen grains of dry citric acid are about equal to half an ounce of lemon-juice, and one lemon generally gives one ounce of juice. Twelve ounces of lemon-juice, equal to 408 grains of citric acid, may be given in one day if necessary.

When alkalescent from *volatile alkali*, it arises from affection of the mucous membrane of the bladder. In this case buchu, pareira brava, turpentine, cubebs, copaiba are used. Buchu is given when pus is present; pareira brava when there is ropy mucus. Buchu is good when the urine is acid, pareira when it is alkaline; in short, when you want a stimulant give buchu, when you want a demulcent give pareira brava, when you want an astringent give uva ursi. (Dr. Bence Jones, p. 146.)

AFFECTIONS OF THE SKIN, &c.

Corns.—They can be enucleated. Pass a penknife vertically round the corn for the full depth of the indurated cuticle in the situation of the marginal line. Then lift out the corn by evulsion, or rather by enucleation. (Dr. F. J. Brown, p. 251.)

Eczema.—Make an ointment as follows: Oil of juniper ʒ iss, suet ʒ ss., lard ʒ iss. It should be applied locally to the part. (Dr. Routh, p. 250.)

Erysipelas.—Wrap the part in a thick sheet of cotton-wool. Smearing the part over with a thick coat of white paint is a very useful, but not an agreeable remedy. (Dr. Goolden, p. 251.)

Favus.—After removing the crusts of favus by poulticing and shaving the head, keep the surface moist with cod-liver oil, or use Dr. Jenner's lotion, composed of one part of sulphurous acid mixed with three parts of water, in the following way: saturate lint with this lotion and apply it all over the scalp night and morning, keeping it moist by an oil-silk cap. (Dr. J. H. Bennet, p. 248.)

Itch.—First rub the body well over with brick-dust, which exposes the acari to the sulphur ointment. Next rub the sulphur ointment well into the skin for half an hour, and then wash well with soap and water. The cure will sometimes be complete in a couple of hours. (p. 250.)

Pemphigus.—Arsenic is almost a specific remedy in the worst cases of this disease, as it remedies the unknown constitutional cause upon which the disease depends. It does not prevent the liability to return, but it renders the attacks less severe than the original one. (Mr. J. Startin, p. 249.)

Pityriasis Versicolor.—Use a wash of bichloride of mercury, (gr. j. to ʒ j.) (Mr. J. Paget, p. 250.)

Apply sulphurous acid. At the Skin Hospital Dr. Jenner gives arsenic internally; and a mercurial lotion is also used. (p. 250.)

Psoriasis.—In obstinate psoriasis, try pitch in the form of pills. Begin with ten common-sized pills three times a day. The dose may be increased if necessary to 60, 70, or 80 pills a day. (Mr. J. Toogood, p. 249.)

Scaly Disease of the Skin.—In these and scrofulous and cancerous diseases the galium aparine is proving very valuable. Mr. Hooper prepares an inspissated juice, a tea-spoonful equalling half a pint of the decoction: ʒ j. of this juice may be taken three times a day. (Dr. Winn, p. 47.)

Small-Pox, *Abortive Treatment*.—Apply to the face the following plaster:—Carbonate of zinc, three parts; oxide of zinc, one part; rubbed in a mortar with olive oil to a proper consistence. This may be used throughout the case, and renewed from time to time. (Dr. Hughes Bennett, p. 50.)

Ulcer, *Callous*.—The primary obstacle to the successful treatment of this ulcer is the presence of a compact and effete solid ring of cuticle. This must be excised by carefully shaving off the accumulated cuticle without wounding the cutis. (Mr. J. Hainworth, p. 242.)

Cancerous.—Mr. Weeden Cooke recommends a carrot poultice to be applied to cancerous sores when offensive. It should be changed every few hours. Mr. Chatterley says that wood soot (not powdered charcoal) answers very well for the same purpose. The wood soot should be sprinkled from an ordinary tin pepper box, on the outside of the other dressings used. It may be obtained from chimneys of fireplaces in which wood and nothing else is burned, or from the ovens of ham and bacon curers. (*Medical Times and Gazette, April* 15, 1854, *p.* 464.)

Phagedænic.—In an extensive case of this kind in the groin, when all treatment to stay its progression had failed, it was determined to apply the actual cautery. It

was done at once; and the parts covered with lint, spread with cerate composed of two parts of resin cerate, and one of oil of turpentine; forty drops of tincture of opium were given to procure sleep. The recovery of the patient was truly remarkable. (Dr. S. T. Chadwick, p. 248.)

From irritation of the Nails.—Apply a hot saturated solution of alum continuously to the parts. This induces rapid absorption of the thickened cuticle and prompt cicatrization of the ulcerated surface. (Mr. Ure, p. 246.)

Urticaria.—Where it arises from defective digestion, give a dinner pill, containing three or four grains of rhubarb, and from half to one and a half grains of ipecacuanha. This remedy is a very valuable one in slowness of digestion. (Dr. G. Budd, p. 106.)

Give quinine as follows:—Quin. disulph. gr. xij.; ammon. sesquicarb. 3j.; magnes. carbon. ℥ ss.; aquæ, ℥ viij.; Fiat mist. ℥ ss. ter die sumend. (Mr. Startin, *Medical Times and Gazette*, *May* 13, 1854, *p.* 487.)

AFFECTIONS OF THE BONES AND JOINTS.

Amputation *by Flaps.*—If the circumference of the limb be twelve inches, for example, the anterior flap should be three inches, and the posterior six inches long; the knife having transfixed the soft parts, so as to make the anterior, or shorter flap, seven inches at its base; and the posterior, or longer flap, five inches. By this method the measured cut surfaces of the two flaps are exactly equal. (Mr. T. Wakley, p. 198.)

Ankle-Joint, *Exarticulation of.*—Pirozoff, of St. Petersburg, modifies Mr. Syme's operation at this joint. He preserves the posterior portion of the os calcis, which is thus left to fill up the heel flap. The operation is conducted in the same way as Mr. Syme's, except that, after the exarticulation of the astragalus, the os calcis is divided by the saw behind the posterior extremity of the astragalus, and the heel is thus preserved, instead of being peeled out. The saw is then applied to separate the malleoli, and a thin slice of the articular surface of the tibia. The cut surface of the tibia is then brought into apposition with the cut surface of the os calcis, and the skin flaps accurately united by sutures. (*Medical Times and Gazette*, *May* 6, 1854, *p.* 468.)

Removal of.—Take care to make as much use as you can of the sole of the foot for the flap. It will have to bear all the pressure afterwards, and is skin ready formed for such purpose. Preserve not only the skin but the whole of the fibrous and fatty granular structure of the sole. Keep the knife free from the posterior tibial artery, which is best done by cutting quite behind the flexor tendons, close to or even shaving the periosteum. Instead of using adhesive strips and bandages afterwards, make use of sufficient sutures, and then apply straps of linen about a foot long and an inch wide, soaked in warm water, to the stump between the sutures. Keep the parts warm generally, with warm water on lint covered with oil-silk, and keep up gentle pressure on the flap. (Mr. S. Hadwen, p. 184.)

Astragalus, *Non-Excision of.*—This is a modification of Syme's operation; but Mr. Simon believes the stump to be better than Syme's, because of its greater breadth, its mobility in the joint, and the saved inch and a half of leg. The operation is performed similar to that of amputation at the ankle-joint, the knife running between the astragalus and os calcis. The flap is taken in the same manner as in amputation at the ankle-joint. (Mr. J. Simon, p. 186.)

Cranium, *Fracture of the Base of.*—If the patient be collapsed, apply external warmth in all forms, and aid reaction by brandy or ammonia. When this has taken place clear the bowels by purgatives. If the patient has been accustomed to stimulants, and if the pulse flag, administer the stimulant he has been habituated to. After the purge has acted, give five grains each of mercury and chalk, and Dover's powder, until he is slightly mercurialized. The patient must be kept perfectly quiet; but if the pulse becomes full, hard, and incompressible, leeches must be applied to the head, or we must bleed from the arm, but with caution. If there should be irritability with fever, apply a blister to the nape of the neck, and give the acetate of ammonia as a diaphoretic. (Mr. J. Hilton, p. 163.)

Excision of Joints.—There is one important view always to be observed with respect to this operation on the knee and the elbow. In the knee-joint endeavour to promote *firm anchylosis*. In the elbow-joint endeavour to ensure *mobility*. (Dr. Keith, p. 183.)

Gangrene, *Spontaneous*.—As all these cases are deficient in power, a stimulating rather than depleting plan must be pursued. Large doses of opium will be well borne, and are very beneficial. The best local stimulation is warmth by cotton wool. (Mr. E. Stanley, p. 208.)

Hip-Joint Disease.—Professor Carnochan relies on constitutional treatment, and abandons all splints and confinement, allowing the pus to escape spontaneously. (p. 168.)

Lifting Apparatus for Beds.—A description and diagrams of the ingenious contrivances for the purpose of lifting patients in hospitals, called "The Lawson Bed and Transferer," will be found at pp. 159,160.

Splint.—For a description and drawings of a new splint invented by Mr. C. J. Gibb, "simple in principle, and capable of adaptation to all fractures of the extremities and to any size of patient," see page 157.

Stumps.—*Rules for the Formation of*.—In the leg, amputation should be performed at the upper portion of the lower third, so that the patient may have a complete command over the artificial limb, without the stump being too long. The leg should not be amputated above the upper third, and where one-third cannot be saved it is better to amputate at the lower third of the thigh; so that a stump may be left of sufficient length and power. A good stump above the knee is far preferable to an indifferent one below. In the thigh the lower third is the best part. As a rule in all cases, the larger the stump the better, unless, as in the case of the leg, the extreme length might interfere with the mechanical arrangements. The leg should never be amputated in children, but the lower third of the thigh always selected, because the amputated limb ceasing to grow in proportion with its fellow, the knee-joint will in time be elevated some inches above the other, imparting to the gait a peculiarly grotesque appearance. (Editor of *Lancet*, p. 198.)

Wrist-Joint, *Excision of*.—Mr. Erichsen and Mr. Fergusson have removed the bones of the wrist by lateral incisions. Mr. Simon has removed them by making two long incisions in the anterior and posterior aspects of the joint, reaching from about two inches above the wrist, back and front, to the centre of the palm and dorsum of the hand, the incision being so managed as to run between the tendons coursing down to their destination on the metacarpal bones and fungus. (pp. 194,195.)

Ununited Fracture.—Introduce a needle from each side of the limb into the interspace between the bones, and pass a continuous current of galvanic electricity through. In an obstinate case mentioned by Mr. Holl, of the York County Hospital, the application was continued daily for a fortnight, and a cure was the result. (p. 156.)

AFFECTIONS OF THE EYE AND EAR.

Ear Polypi.—For the removal of these growths Mr. Toynbee uses a kind of ringed forceps, each blade of the forceps having a ring at the extremity instead of teeth. By this the structure is not broken up, and the growth has a better chance of being removed by the roots. A drawing of the instrument will be found at page 258.

Opacity of Cornea.—Carefully pick off the opacity with a miniature gouge. The signs of the fitness of the cases are, the opacity being raised, and to all appearance being of an earthy nature and superficial. So long as the opacity is due to deposit of earthy material, we have every reason for operating. Malgaigne operates in these cases thus: he made an incision above the upper edge of an opac ty which covered the lower part of the cornea and divided the external laminæ; he then fixed the edge of the opaque portion with fine forceps, and in raising it this peeled off very easily, and the separation was completed by another incision round the lower edge. (Mr. Haynes Walton, p. 253.)

Lachrymal Sac, *Injection of*.—Mr. Obre has brought into notice an ingenious invention for injecting the lachrymal sac. A small silver canula is attached to a vul-

canized India-rubber bag the size of a nut. The canula being introduced into the meatus, a slight pressure on the bag propels the fluid. A drawing of this apparatus will be found at page 255.

TARSAL TUMOUR.—Whenever this tumour takes an outward direction, divide it on the outside, squeeze out the contents, and pull the cyst away with a pair of forceps. If the incision is made horizontally, and the edges brought accurately together, there will be no scar. (Mr. Haynes Walton, p. 255.)

MIDWIFERY AND THE DISEASES OF WOMEN.

ANEMIA.—*In Chlorotic Anemia* especially, give the saccharine carbonate of iron and manganese. This preparation is much more powerful than the simple carbonate of iron. In the *chronic anemia of children*, the extract of bullock's blood, in doses from ℥j. to ʒj., may be given with great benefit. In *infantile anemia* we may give 15 grains of this extract with three grains of the above double salt with great advantage. (Dr. S. T. Speer, *Med. Times & Gazette, Dec.* 10, 1853, p. 598.)

CANCER UTERI, *Hemorrhage from.*—To arrest bleeding from cancerous growths from the neck of the womb, give injections at five minutes' interval, of a solution of the perchloride of iron, 15 parts to 250 of water. (M. Remilly, p. 300.)

CARCINOMA UTERI.—To relieve the excruciating pain, apply the vapour of chloroform to the os uteri by means of Dr. Hardy's 'anæsthetic douche.' (Dr. S. L. Hardy, p. 279.)

GALVANISM *in Obstetric cases.*—A continual current is by no means so effectual as repeated shocks; these rarely fail to excite muscular contractions, for this stimulus acts directly on muscular fibre. The discs of the apparatus may be covered with thin flannel, and applied on either side of the uterus, the flannel being moistened with water. This plan is equally effectual as the application of the discs to the spine and the cervix uteri. (Dr. R. Barnes, p. 266.)

HEMORRHAGE, *during Labour.*—In cases of hemorrhage before the birth of the child, apply the poles of the galvanic battery to the side of the uterus. (Dr. R. Barnes, p. 265.)

From the Navel of new-born Children.—The best plan is (as cauterants usually fail) to secure the three vessels of the cord, by pulling the navel knot forwards, and passing around it a ligature with the help of hare-lip pins. (M. Roger, p. 311.)

HYDATIDS.—For the expulsion of hydatid growths from the uterus, apply galvanism. (Dr. Barnes, p. 266.)

LACTEAL SECRETION.—The stimulating influence of galvanism is well worthy of a trial, to arouse the activity of the mammary gland. (Dr. R. Barnes, p. 266.)

OVARIAN TUMOURS, *Excision of.*—The length of the incision should be regulated by the size and character of the tumour. The length should be such, that the solid part of the tumour should be extracted entire. The pedicle should be transfixed with a nævus needle, carrying a whip-cord ligature, and tying on each side as closely as possible. The ligatures should not be left in the peritoneal cavity, nor should the stump slough off in it, therefore the pedicle should be well drawn forward so as to project above the wound and the ligature attached to the hare-lip pins, with which the lower line of the incision is closed. It is of the greatest consequence to ascertain before operating whether there are any adhesions which will prevent extraction. These generally occur in about one third of the cases. We may judge whether there be or not, by ascertaining if the patient has been liable to peritonitis, and if the tumour does not change its position on a deep inspiration and expiration, and by alterations of position. If adhesions are suspected, it is better to make a small exploratory opening, and examine the connections of the tumour by the finger or hand. (Mr. J. E. Erichsen, p. 298)

PELVIC VISCERA, *Prolapsus of.*—In these cases, with lacerated perineum, the object must be to remove the actions of the sphincter ani and the levatores ani, by removing their points of attachment to the coccyx. Mr. Hilton describes his plan of operating in these cases as follows:—A narrow sharp-pointed knife was introduced through the skin on one side of the point or free extremity of the coccyx, about half or three-quarters of an inch from its end; it was then passed into the pelvis

between the concave surface of the coccyx and the rectum, special care being taken not to puncture the intestine. The cutting edge of the knife was now made to sweep over the sides and ends of the coccyx, so as to separate from it the coccygeal attachments of the sphincter and levatores ani. The knife was then withdrawn through the same small opening by which it had been introduced, scarcely any blood escaped at the wound, but a compress of lint, supported by adhesive plaster, was applied over it to keep the parts quiet and to intercept the flow of blood. (Mr. J. Hilton, p. 277.)

Polypus Uteri.—Sometimes a polypus can be reached by the fingers easily, and separated from its attachments, particularly when flabby or putrid. Introduce two fingers of the left hand into the os uteri, to feel for the neck of the polypus, and gently but firmly tear it from the surface to which it is attached. It is obvious that whenever the fingers or hand can be used for such a purpose in the womb, it is always preferable to instruments. (Dr. F. H. Ramsbotham, p. 303.)

Sometimes the ligature is used, at other times excision, or torsion; occasionally biborate of soda given in large doses for several days will cause its expulsion. (Dr. Tyler Smith, Mr. Canney, Mr. Hodgson, and Dr. Copland, p. 304.)

Galvanism applied to the uterus has brought these growths into view where ergot had failed. (Dr. R. Barnes, p. 266.)

Premature Labour, *Induction of by Galvanism.*—In a case where it was necessary to induce premature labour for half an hour on the 23rd of Jan., the poles of the galvanic battery were applied on either side of the uterus. The womb became contracted. On the 24th and 26th the application was continued one hour, and on the evening of the 27th slight pains came on. On the morning of the 28th they had increased, and at 9 a.m. the child was born. Galvanism is more valuable than ergot in these cases, because if any unforeseen obstacle occur to the birth of the child, rupture of the uterus might be induced. Besides, if the case were prolonged, there is some danger, from the number of doses required, of producing ergotism in the mother. (Dr. R. Barnes, p. 263.)

By Ergot of Rye.—In a large number of cases the following prescription proved successful in inducing premature labour. ℞. Secale cornut. pulv. ʒiij.; aquæ ferventis ℥vj.; infunde per semihoram in vasa leviter clauso, et cola. ℞. Infusi suprà prescripti ℥vss.; acid. sulph. dil. ʒss.; syrupi ʒij.; tinct. card. co. ʒij.; Misce, sumat partem quartam 4tis horis. The doses required varied from three to thirty. (Dr. F. H. Ramsbotham, p. 274.)

Puerperal Convulsions.—Administer chloroform in ss. doses, and keep up its full effect according to the power of the paroxysms. This treatment was quite successful in a case related by Mr. Andrew Bolton. Morphia had been given previously, but without any good effect. (p. 284.)

Turning.—Nothing so much facilitates the turning of the child when the parts have become wedged, as the inhalation of chloroform. (Dr. Snow, p. 271.)

Uterine Catarrh and Internal Metritis.—A sound symptom to judge by in this disease, is, that lateral pressure all down to the neck of the womb gives considerable pain. Dr. E. J. Tilt recommends the application of the tincture of iodine to the inside and outside of the neck of the womb in such cases. The second application may take place ten days after the first, and then repeat it every four or five days, if necessary, for three months. The uterine mucus should be first cleared away. The best injection in such cases is ʒj of the acetate of lead and one pint of decoction of poppy heads. As a remedy, five to ten grains of ergot of rye, given three or four times, proved as useful as any. (Dr. E. J. Tilt, pp. 286, 290.)

Uterus, *inaction of, from Chloroform.*—Apply the stimulus of galvanism. (Dr. R. Barnes, p. 266.)

MISCELLANEA.

Chloride of Zinc.—To prevent this caustic from *running*, mix it with plaster of Paris, in proportions to suit the case in hand. (Mr. Cock, *Med. Times and Gazette*, *May* 13, 1854, *p.* 487.)

Cod-Liver Oil.—1. *When too nauseous for the patient*, give it floating on some

bitter menstruum, in coffee, ginger wine, infusion of quassia, or, better still, in a solution of quinine, with a drachm of the tincture of orange peel, or give it in very hot milk, or smear the mouth well with marmalade or black currant preserve, and having thus absorbed the attention of the gustatory nerve, immediately swallow the oil. 2. *When the oil excites sickness.* Prepare the stomach by hydrocyanic acid and bismuth three times a day. Give first a little dry biscuit or bread crumb, and then float the oil on the coldest spring water, and give it immediately; give it in the recumbent posture, an hour or two before getting up or after going to bed. 3. *When the oil cannot be digested*, the following is useful: ℞ Rad. rhei ʒiij.; rad. zingiberis ʒij.; rad. gentian, ℥iss.; sodæ carbon. ℥iij.; aquæ lb. viij. The roots to be cut into small pieces; the infusion to be made with cold water, and to stand twelve hours. Take a wine-glassful thrice a day for a week before beginning the oil, and then give it with the oil. (*Med. Times and Gazette, May* 13, 1854, *p.* 487.)

Substitute for Cod-Liver Oil.—Cocoa-nut oil seems to possess the same valuable properties as cod-liver oil, and in some cases was efficacious where the latter had been useless. (Dr. T. Thompson, p. 92.)

Iodine.—The topical application of this remedy is becoming very general in London. The following is the formula: ℞ Iodinii ʒj., sp. vini rect. ℥j.; ft. solutio. It is better to keep this some time before using. It should be applied in glandular affections beyond and around the enlarged parts, so that the absorbed fluid may be carried through the gland by the lymphatic vessels. It is used topically, 1st, in *pleuritic and neuralgic stitches;* 2nd, to the throat in cases of *aphonia* or hoarseness; 3rd, to the mucous lining of the throat itself in cases of congestion and of *enlargement of the tonsils;* 4th, around the external parts of the eye, in cases of *strumous inflammation*; 5th, in all forms of *periostitis*, whether syphilitic or strumous; 6th, in *glandular affections* as above mentioned; 7th, as injections into cysts and cavities of *abscesses*, provoking adhesive, but not suppurative inflammation, as in hydrocele. (*Med. Times and Gaz., April* 8, 1854, p. 347.)

Opium.—*Nausea from.*—To counteract the nausea from opium, combine with it 30 minims of dilute sulphuric acid. The nausea from hydrochlorate of morphia is best controlled by dilute hydrochloric acid. (Dr. J. Williams, *Lancet*, Nov. 19, 1853, p. 497.)

Poisoning, *By Lead.*—Iodide of potassium in doses of 10 grains acts as a curative agent in lead poisoning, by converting the lead into a more soluble form, which can be readily taken up by the blood. It acts more rapidly in conjunction with galvanism. (Dr. J. R. Nicholson, *Lancet*, Jan. 14, 1854, p. 42.)

In a case of aggravated paralysis from lead poisoning, but in which there was absence of colic, the following prescription was completely successful; Iodide of potassium, 5 grains; liquor of potassium ½ drachm; peppermint water, 1½ ounces; three times a day. As the recovery progressed, it was observed that the blue margin of the gums gradually disappeared. (Dr. R. H. Goolden, *Lancet*, Dec. 3, 1853, p. 252.)

By Opium.—Belladonna has been found useful in poisoning by opium. When the patient is comatose and other remedies fail, try the following: tincture of belladonna, six drachms in five and a half ounces of water. Take an ounce of this every half-hour, till the coma begins to disappear, or till the pupils dilate. In another severe case, one ounce of the tincture of belladonna was given at once, in three ounces of water; in half-an-hour two drachms more were given. (Dr. Anderson, *Monthly Journal*, April, 1854, p. 377.)

Potassa Fusa. To prevent this from deliquescing, mix two parts with one part of lime. Cylinders of this may be made nearly as manageable as nitrate of silver. (Dr. Bennet, *Lancet*, May 6, 1854, p. 497.)

Snake Bites. Give 5 grains of bicarbonate of ammonia every five minutes, administer an enema of mustard and water, with two drachms of tinct. of valerian, which may be repeated if returned. Apply a mustard cataplasm over the cardiac region, and then give the following: Chloroform, ʒj; spirit ℥ij; mist. camph. ℥iij.; m. ℥j. every ten minutes. (Dr. Lowndes, *Monthly Journal*, Feb. 1854, p.

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